Textile World

ESTABLISHED 1868

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MANAGEMENT

It Is Now Industry's Job (Editorial) 55
Code Administration Replaces Code Making as Textile Job... 57
Lower Operating Costs from Proper Sales-Production Relation 62
Annual Meeting of Textile Research Institute 65
D-13 on Twist—Definition Clarified at Meeting 74
Rayon Weavers Hold First Annual Meeting 75
Costs and Prices of Cotton Textiles Under NRA 86
Cotton-Textile Institute Dissects NRA at Meeting 87

MERCHANDISING

Overlapping Code Jurisdiction in Silk and Rayon 59
New French Novelties Feature Metals and Lastex 60

MILL ENGINEERING

Many Applications for Metal Spraying 82
Fire and NRA—Shorter Hours Require Better Protection 84
New Machinery and Processes 100

MATERIALS

The Personal Page 95
The Overseer's Round-Table 96

MEN

Simple Rayon Tests Aid Weaver and Knitter 70
Purification Improves Fibers for Electric Insulation 85

METHODS

Full-Fashioned Selvages—Beginning Discussion 66
Combed Cotton Group Discuss Preparatory Processes 67
Throwing Silk and Rayon—Extracting and Dyeing 68
Experience Best Guide to Warp-Sizing Practice 72
Coatings and Suitings—Design Suggestions 73
Loom Faults Met in Cotton Weaving Tests 76
Piece-Slip Reduces Remnants in Finishing Plant 77
Inspecting Fabrics for Shading and Other Defects 77
Processing Men's High-Grade Novelty Suitings 78
Systematic Worsted Doffing and Quality Checking 79
Maintenance of Carding and Spinning 80
Half Hose and Effect of Twist in Yarn 81
Picker-Lap Variation Reduced 81
Careful Manipulation in Finishing Glove Silk 83

INDUSTRY BRANCHES

Cotton Digest 106
Wool Digest 108
Silk Digest 110
Rayon Digest 112
Knitting Digest 114
Processing Digest 116
Industry-Wide Events 103

DEPARTMENTS

Overseers' Round-Table 96
Personal Page 95
Questions and Answers 98
New Machinery and Processes 100
New Publications and Business News 104
TEXTILE WORLD Analyst 105
Quotations 118

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Editor: DOUGLAS G. WOOLF

It Is Now Industry's Job

ATTENDANCE at the annual meeting of the Cotton-Textile Institute last month was, to us, a thrilling experience. The thrill came not alone from the broad program of code administration which was outlined there; not alone from the congratulations showered upon the industry by Deputy Administrator Whiteside, speaking in his own behalf and for General Johnson.

The greatest inspiration came from the thought that the very purposes for which the Institute was formed way back in 1926, and the very ideals which the industry's leaders envisioned at that time, were at last being translated into really effective action.

No one who has followed the course of this organization during the last seven and a half years can fail to realize that it has been preaching the doctrine of self-government which today is the keystone of our national recovery movement. The extent to which the Institute failed to achieve its full purpose is explained by the fact that it was ahead of its time. The extent to which it succeeded—and there has been a very real measure of success—represents an everlasting tribute to the leadership, first, of Walker D. Hines, and then of George A. Sloan; to the efforts of a group of leaders in the industry who have given heavily of their time and energy; and to the great majority of manufacturers who have participated whole-heartedly in each successive plan advanced by the Institute.

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But these facts do not merely offer a basis for self-congratulation — pleasing and well-warranted though that thought is. They have a far broader—in fact a national—significance.

Now that critics of the NRA are bemoaning the transfer of industrial management to a bureaucracy at Washington, the textile industry can point to its own program as an example of self-government which every industry in the country can emulate if it will only organize itself to that end. Washington is not dictating the affairs of cotton manufacturers; the Cotton Textile Industry Committee, representing those manufacturers, is doing that. And, from what we know of the personnel of the associations in the other branches of the textile industry, we are confident that in each case the code authority will administer its code for those it represents.

That, in essence, is the real purport of the recovery act as it applies to industry. That is what Washington wants—and must get, if the movement is to succeed.

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Finally, there are two phases to the job which confronts each code authority.

The first is the administration of the code itself, and of the supplementary fair-practice provisions which must be developed. As we indicated above, we believe that phase will be executed properly.

The second phase is more difficult—and more important. It involves the formulation of long-term planning for the future.

Even after the complete restoration of employment and purchasing power, industry will face many problems as yet unsolved and, in fact, untouched. The social and economic implications of the tremendous industrial growth of recent years will still confront us. We have, in effect, merely declared a moratorium on most of them.

That moratorium was necessary, but its early termination is equally essential. Once the pressure of the emergency is relieved, the need for averting recurring emergencies in the future must be met.

Industry has just begun to act—and to think.

THE EDITOR SAYS

And Then What?

WHEN we emphasized, in the editorial on the preceding page, the need for future planning by industry, we were not producing merely abstract phrases. We had definite thoughts in mind. Here is the way our thinking has been running: Looking ahead for the next few years, it seems reasonable to anticipate a fairly broad upward trend in industrial activity in this country and throughout the world generally. We shall not go into our reasons for this belief; to avoid argument, let's call it a hunch (although, confidentially, it is more than that). Along about the time when the legal life of NIRA comes to an end, there is a good chance that we shall be enjoying some form of prosperity—profitless or otherwise. If this proves to be true, it is a safe bet that the individualist will be back in the saddle: not the representative of the type of individualism which we hope will always be preserved in this country, but the rugged individual who can see nothing in all this "bunk" about cooperative effort. It is easy to predict the doctrine which he and his fellows will preach. It will be something like this: "We had started to recover after the low point of March, 1933, anyway. The Government stepped in with its NRA foolishness—and hindered, rather than helped, the natural process of recovery. Despite this handicap, we have worked our way to prosperity once more. Now is the time to get back to the fundamental principles on which the glorious history of this country has been based, etc., etc., etc. Now is the time for Government to get out of business—and to stay out." . . .

And that, we believe, is just what will happen. There will be a very natural reaction which will be carried to the extreme where even the value of associational effort will be minimized, and where the one great contribution which NRA has held potentially—the opportunity for self-government by industry—will be cast, temporarily, into the discard. . . . So far, so good. Who's afraid of prosperity? (We had to get Walt Disney in here somehow.) But, will we have made any real progress toward an assurance of sustained prosperity? Not to mention the national and international problems of banking, currency, tariffs, disarmament, etc., what will industry have done about getting the good out of technological advance, without suffering from the bad? Will we not come smack up against another crisis created by a chain of events similar to those which were responsible for the one from which we are just emerging? In another five years, or ten years, or what have you, shall we have to go all through this mess again? Our own private answer is: Yes, unless we start doing something about it pretty soon. . . .

Secretary Roper has organized a Business Advisory and Planning Council, composed of leaders in American industry and business. We happen to know that a great many manufacturers consider that council "just another one of those things." We don't. The titles of its sub-committees indicate its possibilities. They deal with decentralization of industry, international trade relations, unfair trade practices, statistical reporting and uniform accounting for industry, industrial relations, and a number of other vitally pressing problems. But that Council can only *suggest* lines of action. Unless industry in its many branches is organized to follow through on those suggestions, it *will* be "just another one of those things." . . . That is why we advise trade associations, for their own good and that of the industries they represent, to begin today to think of tomorrow.

P. S.—Since we wrote the above, Gerard Swope's plan for establishing a permanent type of industrial self-government as an aftermath of NRA, was announced. Overlooking differences of opinion on details, it is difficult to understand how any thinking man can fail to see in Mr. Swope's psychology the essence of American industrial thought of the future.

May I Buy a Loom?

SOME of the interpretation of the regulations limiting the installation of additional productive machinery in cotton mills has been absurd. This section of the code has been cited as a horrible example of the effects of dictatorship; as evidence that the last vestige of self-government has been removed from industry. Nothing is farther from the truth. The act was distinctly one of self-government by the textile industry—and a form of self-government, moreover, that was impossible of attainment prior to the NRA. Cotton manufacturers, through their representative organization, decided that, in view of the existing excessive productive capacity of the industry, it was necessary to limit further expansion during the emergency. In pre-NRA days, such a decision would have taken the form merely of a statement of policy, with no real enforcement possible. Today, that possibility exists. . . . Not only was the decision made by the industry, and not by NRA, but it will be carried out by the industry, and not by NRA. It is the Cotton Textile Industry Committee which will recommend the granting or withholding of certificates for installation of additional machinery. It is obvious that these recommendations will be accepted by the Administrator.

This is no blow at the machinery industry. The regulations place no barrier in the way of replacing obsolete or worn-out machinery, or of adding units to bring the operation of existing productive machinery into balance. Textile men are only too aware of the need for stimulation of the capital goods industries if the recovery movement is to proceed at full speed. The only limitation they have set through the new regulations is a check on unwarranted expansion of their own industry which would inevitably react disastrously upon them and their machinery suppliers.

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Re A. D. Whiteside

ONE of the most surprising bits of news we have read recently was the report of an attempt by certain labor leaders to seek the removal of Deputy Administrator A. D. Whiteside, in charge of textiles. The alleged reason, as we got it, was that his attitude was proving inimicable to the interests of the silk and rayon industry. . . . Even though we don't believe there is a chance of such an attempt succeeding, we feel that a few remarks about Mr. Whiteside are in order. . . . We knew him during his presidency of the Wool Institute. We have watched him preside at several code hearings. We saw him in action at the Cotton-Textile Institute meeting last month. We have heard many an inside story about his efforts in conference with textile committees. The net result of all we know and have heard about him is a firm belief that it would be impossible to secure a Deputy Administrator who could serve the interests of the textile industry, *in all its branches*, more impartially, more intelligently, or more tactfully, than Mr. Whiteside has served and is serving them. He knows the industry and its specialized problems. He is sympathetic toward minorities as well as toward majorities. He combines kindliness with firmness. The textile industry is heavily indebted to him—and the manufacturers whom we know acknowledge that debt.

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CRITICS of the entire recovery program have been having a Roman holiday lately. There's no law against it of course, but they may find a little later that they haven't anything left to celebrate with.

• The annual meeting of the Cotton-Textile Institute was held in New York Oct. 18. Detailed report of this meeting will be found on pages 86 to 90 of this issue, occupying this month's two-color insert.

Code Administration

REPLACES CODE-MAKING AS MAJOR TEXTILE ACTIVITY UNDER NRA

THE period of code-making, as such, is largely over so far as the textile industry is concerned. Most branches of the industry have had their codes approved by the President. The period of administering them, and of supplementing and further refining them, is now under way. This job is in the hands of the respective code authorities; from Washington will come mainly what help and guidance may be necessary to fit the textile development into the recovery program in general.

Gradually, the knotty problems which complicated the formulation of codes for the many branches of this basic industry are being overcome. Chief among these has been of course the question of jurisdiction, brought particularly to the fore in connection with the silk and rayon manufacturing and finishing divisions. This problem was the subject of a series of conferences in Washington last month, under the direction of Deputy Administrator A. D. Whiteside and attended by the leaders of the various industries affected. The attitude of the Administration in this connection was definitely indicated when General Johnson stated: "I am not willing to open up the cotton code and upset all the rates in that code just because somebody is striking in Paterson, N. J."

Below are summarized the major recent developments in connection with the codes for the several branches of the textile industry.

COTTON

General Johnson's formal approval of the regulations limiting the installation of additional productive machinery by cotton manufacturers put this important provision of the code into actual effect. The details of these regulations were published in these columns last month.

KNIT GOODS

An executive order issued by the President on Oct. 21 granted a further stay to underwear manufacturers who had requested that they be not included under Part I, Section 1 (c) of the underwear code, which section covers manufacturers of "any and all fabrics sold or used mainly for underwear purposes made on flat or warp or circular knitting machines."

A hearing was held in Washington, commencing Oct. 16, on the code for the knitted outerwear industry. The code proposed a maximum work-week of 40 hours for employees, with certain exceptions; limited productive machinery operation to two 40-hour shifts; and fixed minimum wages at the rate of 35c. an hour, except for learners over an 8-weeks' period, at the rate of 75% of the minimum wage.

At the first meeting of the Hosiery Code Authority, John Wyckoff Mettler, president of the Interwoven Stocking Co., was elected chairman of the Authority, and Earl Constantine, managing director of the National Association of Hosiery Manufacturers, was elected executive director.

PROCESSING

As an aftermath of the hearing held Oct. 9 on modification of the cotton textile code to include the finishing, mercerizing and thread industries, a series of conferences was held in Washington. At the time of going to press, the modification order has been approved by General Johnson and was on the President's desk awaiting his signature.

A hearing was held Nov. 10 on the code submitted by the Institute of Dyers and Printers; and one on Nov. 15 on the code submitted by the National Textile Processors Guild.

SILK

The essential provisions of the code for the silk textile industry, and of that for the throwing industry, are printed below. Both were approved by the President.

The acute labor situation in this industry, brought so dramatically to the fore at the modification hearing in Washington Oct. 9, continued to be one of the most difficult and unsatisfactory phases of the textile situation. Consequently, considerable relief was felt when the National Labor Board handed down a ruling (Nov. 2) ordering the strike to be called off and setting rates for weavers and other workers.

WOOL

Hearing on the code for the wool trade, filed by the Boston Wool Trade Association, was held in Washington Oct. 23. The code proposed a minimum wage of 37½c. an hour, or $15 a week, and a basic maximum work-week of 40 hours.

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Throwing Code Provisions

THE important details of the code for the throwing industry, as submitted by the Throwsters Research Institute and approved by President Roosevelt Oct. 11 to become effective Oct. 16, are abstracted below:

Scope of industry: Term "throwing industry" defined as embracing all plants of throwing machinery whether owned and/or operated by commission throwsters or by those throwing material for sale or for their own use and made of silk, rayon or acetate yarn.

Child labor: Employment of minors under 16 prohibited.

Minimum wages: All employees, excepting bobbin and skein carriers, bobbin cleaners, and learners, to receive a minimum wage of 30c. per hour in South and 32½c. per hour in North (to correspond to $12 and $13 for 40-hour week respectively). Specified that total number of bobbin and skein carriers and bobbin cleaners shall not be in excess of 10% of total number employed on the shift, and rate of pay of such casual and incidental labor shall not be less than 80% of the minimum. Also specified that no employee shall receive for 40 hours less compensation than he received or would have received as of Apr. 1, 1933, for a period not exceeding 50 hours per week. Detailed specifications for learners are included in the code.

Hours of labor: Maximum of 40 hours per week for productive employees.

Machine hours: Limited to two shifts of 40 hours each with exception that a reduced force of male operatives over 18 years of age and not to exceed 35% of the total number working in all throwing processes on the larger of the two full shifts may be employed as and when necessary during the time when neither of the full shifts is working; the minimum hourly wage to be received by the productive employees on this reduced force shall be 40c. per hour in South and 43.3c. in North.

Reports: Periodic reports provided for on wages and hours of labor; machinery data, and production data.

Code Authority: Code Administration Committee set up to cooperate with the Administrator as a Planning and Fair Practice Committee.

Further recommendations: Specified in code that Code Authority may recommend further limitation of machine hours and may provide for flexibility in this respect; may recommend setting up certification requirement prior to purchase or building of throwing machinery, and prior to establishment of plants of throwing machinery; and may recommend number of spindles to be operated by an employee on different classes of yarns.

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Silk Code Provisions

THE important details of the code for the silk textile industry, as submitted by the Silk Association of America and approved by President Roosevelt Oct. 7 to become effective Oct. 16, are abstracted below:

Branches included: The term "industry," as used in the code, is defined as meaning "the manufacture of silk and/or rayon

A character-study of NRA heads: General Hugh S. Johnson (left) and his chief legal advisor, Donald Richberg, photographed during the cotton-code modification hearing. (International News Photos.)

and/or acetate yarn (or any combination thereof) woven fabrics or any of the processes of such manufacturing except throwing, but it shall not include such manufacturing of rayon and/or acetate yarn fabrics as are governed by the provisions of the cotton textile code." It is also specified that the term includes the converting of the woven fabrics named above, and the manufacturer of silk, rayon, and/or acetate yarn sewing threads, spun silk and woven labels.

Hours of labor: Maximum work-week of 40 hours per productive employee. In case of emergency, maximum hours of repair-shop crews, engineers and electricians to be 40 with a tolerance of 10%. Overtime above 40 to be paid for at time and one-third.

Machinery hours: Maximum of two shifts of 40 hours each per week for productive machinery which includes all looms; all winders, warpers, coppers or quillers, when used for commission work; dressing fromes for the spun-silk industry; spooling, coning, balling, tubing, and skeining for the sewing thread and floss industry.

Minimum wages: $12 per week in South and $13 in North for 40 hours. For learners, during apprenticeship up to six weeks, 80% of minimum. It is specified: "The amounts as of July 1, 1933, by which wages in the higher paid classes, up to $30 per week exceed in wages in the lowest-paid classes, shall be maintained." This was re-emphasized in the President's executive order approving the code.

Child labor: No minor under 16 shall be employed.

Code Authority: General Planning Committee designated to cooperate with Administrator as a Planning and Fair Practice Agency for the industry.

Reports: Provision made for periodic reports on wages and hours of labor; machinery data; and production, stocks and orders.

Competitive practices: Code provides for granting of equal terms and prices; prohibits taking orders below cost of production; requires payment within ten days of receipt at invoice rate of date of shipment; requires all disputes as to claims on finished merchandise to be made in writing within ten days after receipt of goods by buyer; prohibits taking orders for, or printing, or jacquard weaving, any design not registered with Textile Design Registration Bureau of Silk Association; requires confirmatory signed contracts in all transactions in excess of $500, and specifies that employers shall endeavor to affect appropriate adjustments in contracts entered into prior to effective date of code.

Standard terms: Code specifies standard terms for each of the several divisions of the industry.

A Letter to General Johnson

WE SENT the following letter to General Hugh S. Johnson, Administrator of NRA, on Oct. 30:

Dear General Johnson:

So far as the textile industry is concerned, facts amply justify your resentment of the implications contained in the Federal Reserve Board's statement that decline in activity has been marked in industries in which processing taxes or codes have become effective recently. Although I am confident that the Board did not intend to suggest those implications, the unfortunate juxtaposition of ideas in its statement served to offer more ammunition to the groups in this country who, for one reason or another, seem more anxious to deny than to welcome recovery.

During recent months, the textile industry has enjoyed a period of expanding demand and price firmness contrasting sharply with the years of cut-throat competition and suicidal price and wage chiseling which preceded it. This change did not just happen; it was the direct result of the Administration's recovery program.

Furthermore, this improvement has not been actually arrested. The slackening which took place in August and the hesitation which featured textile markets during part of September were entirely natural. Anticipation of the effects of both the codes and the processing tax had developed an active demand for goods. There was not, as suggested by the Secretary of Agriculture, an attempt on the part of textile mills to jump the effects of the codes and taxes. They were merely supplying a first-hand demand for their goods. Part of that demand, as indicated above, was anticipatory and did not necessarily represent proportionate demand from ultimate consumers—but, so far as the mills were concerned, it was actual business, and the goods passed from the mills to their customers.

However, that is not the important point. Emphasis belongs on the fact that one of the great basic industries *has* been enabled to contribute materially to the reduction of unemployment. Emphasis does not belong on unfair implications attached to fluctuations in the curve of that improvement.

TEXTILE WORLD'S index of textile mill activity shows that the rate during the first nine months of this year was 36½% above the corresponding period of 1932 and 6% above the first nine months of the average year during the eight-year period 1924 to 1931, which we roughly assume as "normal." In view of the fact that the same index showed the activity for the first three months of this year as only 1½% over the first quarter of 1932 and 17% under the first quarter of the average year referred to above, these statistics show clearly the change that has taken place since March.

Equally eloquent is the testimony I receive from the great majority of textile manufacturers with whom I come into contact. No one of them likes every individual development which has cropped up in this heroic drive out of the depths. I don't—and I presume you don't. But here, in the words of one manufacturer, is the fundamental viewpoint I encounter generally: "If last March I could have been shown the activity curve of the textile industry during the next six months and had been asked what that change would be worth to me as a manufacturer, I would have replied that almost no price, except dishonesty, would be too great. I am trying to remember that, after the fact." That, General, is what I regard as the attitude needed by all industrialists and business men. To repeat, recovery is not just happening. It didn't happen in 1930 or 1931 or 1932. It is the result of definite polices which all of us—including a good old Hoover man like myself—must recognize and support.

In the shaping of those policies, you have played and are playing a vital and marvelous part. You are now getting the dead cats you predicted some months ago. Some of them are being hurled by those to whom politics or self-interest is more important than national recovery. Some are from those who expect the Administrator to produce a diplomatic message in each of the hundreds of statements he is asked to make.

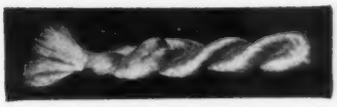
But I honestly believe that from the less articulate millions of reemployed and still unemployed, you are getting the thanks and the hopes of a people which has suffered much. I know of no better fumigant for the odor of dead cats.

With highest esteem,

Sincerely yours,

DOUGLAS G. WOOLF,
Editor, TEXTILE WORLD.

OVERLAPPING OF CODE JURISDICTION HANDICAPS WEAVERS OF



Silk and Rayon

By ***John Black***

EASILY the most important problem now facing the weavers of silk and rayon and combined fibers as regards efficient administration of the NRA codes, is the need for a clarification of divisional lines between the branches of the industry. The issue relates basically to the trade associations, which now have become quasi-government agencies empowered by law to administer and enforce code specifications. From the viewpoint of the weavers, the trade association picture is in real need of clarification. Overlapping jurisdiction is the rule rather than the exception—a situation militating seriously against efficient enforcement of code rules, which today is a major function of the trade association.

Every chief improvement which the mills hope to secure through the NRA—stability of labor conditions, balanced production and demand, and the elimination of unfair trade practices—depends upon finding a solution to this problem. What are the natural bounds of jurisdiction between the silk and silk-and-rayon group, on one hand, and the rayon and rayon-and-cotton group on the other? Since the lion's share of the business today is in mixed fabrics, which contain varying percentages of natural and synthetic fibers, no arbitrary answer to this question is possible. However, a review of the present status, in terms of associational coverage will be helpful in that direction.

The destiny of the silk and rayon weavers in the NRA era lies primarily with three agencies, as follows: The Silk Association of America (recently re-christened the Textile Institute), the National Rayon Weavers' Association, and the Cotton-Textile Institute. The Throwsters' Research Institute is a contributing factor, since it has now become the NRA code functionary for the entire silk throwing industry, thus including the throwing divisions of weaving mills; however, the question of jurisdiction is less acute here, since the Silk Association has ceded code authority, on throwing machinery operation, to the Throwsters' Institute.

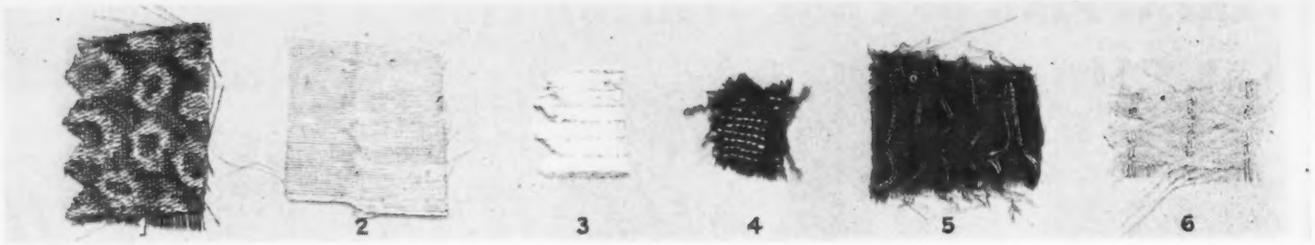
The Silk Association, now incorporated as the Textile Institute but not yet employing that name in general use, has been reorganized as a federation of separate units, the aim of the change being to give complete autonomy of action to the different branches of the industry which it covers. The Rayon Weavers' Association, formed last summer, draws its membership mostly from the all-rayon and the rayon-and-cotton weaving industry; in addition, however, the Rayon Weavers' Association's roster includes manufacturers of silk-and-rayon fabrics, some of whom are also members of the Silk Association. The Cotton-Textile Institute, in addition to its large membership among weavers of all-cotton fabrics, also includes a substantial group of mills weaving cotton-and-rayon mixtures. Indeed, most of the members of the Rayon Weavers' Association are also members of the Cotton-Textile Institute.

The problem of interlocking memberships becomes clearer when we examine how this has worked out in code enactment. With the adoption of its code providing the $12-$13 minimum wage and the 40-hr. week, the Cotton-Textile Institute established a labor precedent for all weavers, and since then codes drafted by the Rayon Weavers and the Silk Association and carrying substantially the same labor provisions, have been approved. The effect has been to establish uniform minimum wages throughout the weaving industry, irrespective of yarn content. Labor's attitude to this move was reflected in the costly broadgoods strike, and there are indications that further trouble may ensue, unless some permanent basis of wage compromise is effected. In defending the code provisions for minimum wages, the manufacturers through their associations contended that in effect competition links the three fabric groups—cotton, rayon and silk—in an unbroken chain, and that higher minima in any one division would give unfair advantage to the other.

With respect to the two other major improvements which should accrue to the silk and rayon weavers through code administration by trade agencies—balancing of production and demand, and elimination of unfair trade practices—the outlook, so far as providing the necessary code machinery is concerned, is decidedly more encouraging. Overproduction can be greatly ameliorated under the new status. All three codes contain adequate provisions for the reports at regular intervals of output and sales by individual mills. The function of the associations is to correlate these figures and use them as basis for recommendations to guide the weavers in making production conform to prevailing demand.

Similarly the codes provide machinery for the elimination of unfair trade practices; these practices, hitherto opposed only by moral suasion, now are legally outlawed. The cotton code created the Cotton Textile Industry Committee, one of the duties of which is to recommend standards looking to elimination of unfair and destructive prices and practices in that industry. The silk code specifically prohibits many unfair practices, and establishes business standards which include: (1) Equal terms and prices to all customers; (2) No selling below cost (subject to definition by the industry's General Planning Committee); (3) Consignment and memorandum shipments must be paid for within 10 days of receipt of goods; (4) Disputed claims must be filed within 10 days of receipt of goods; (5) No copying of registered designs without consent of person registering the design.

When it comes to enforcing the various beneficial provisions of the codes, however, we are again confronted with the problem of overlapping jurisdiction. Weavers of mixed fabrics advise us that they are getting similar requests for production and sales data from two different associations. This duplication of effort is due fundamentally to the difficulty of defining the weaver who combines various yarns. It is an issue calling for early solution, since it tends to confuse and bewilder the individual weaver, and thus weaken his support of the NRA program. *(Continued on page 111)*



New French

By Marie Stark
Style Consultant

ASKED what type of weave Paris is emphasizing this season, one answers without hesitancy, "Novelties!" Asked what type of novelties, one is tempted to reply, "Every type!"—for that reply comes very close to the truth. Paris is making novelties, like Schiaparelli's "Treebark" and "Champignon," so startling that they fairly take one's breath away, and on the other hand charming fabrics so exquisitely fine and conservative in design and construction that it requires close observation to see they are not plain, classic weaves.

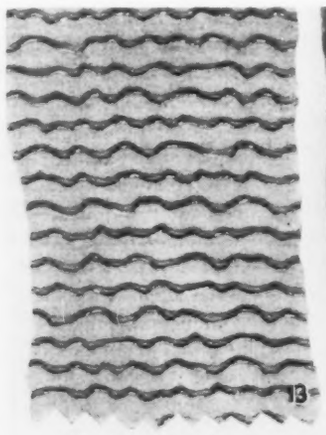
The extreme novelties may be roughly divided into two classes—those with lamé effects, and those using elastic Lastex yarn which permits them to do things fabrics have never done before. The Lastex materials are sponsored principally by Schiaparelli and Dilkusha in their more striking forms, and by Molyneux and Augustabernard in conservative versions. The lamés are used by everybody in Paris and we will discuss them first.

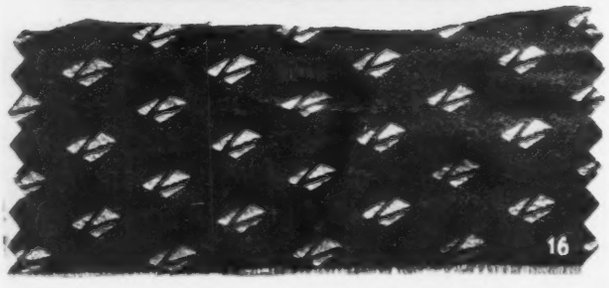
Heretofore one has associated lamés with rich and formal clothes, and Paris has used them lavishly in that connection this season, but she has not let it go at that! She has introduced metal threads in wool and even cotton fabrics so discreetly and with such sure taste that even the most conservative houses have not hesitated to make day and even sports clothes of them.

Take the wool material with widely spaced metal pin dots in it shown as No. 15. Lelong makes a smart suit of it in oxford gray with gold dots. The dull white silk with a fine gold line running through it, No. 10, is used by Patou and Mainbocher. It is suitable for a blouse with an informal tailored suit. The pale blue novelty with spaced metal stripes, No. 6, and the satin run with fine gold cross bars, No. 3, are also blouse materials.

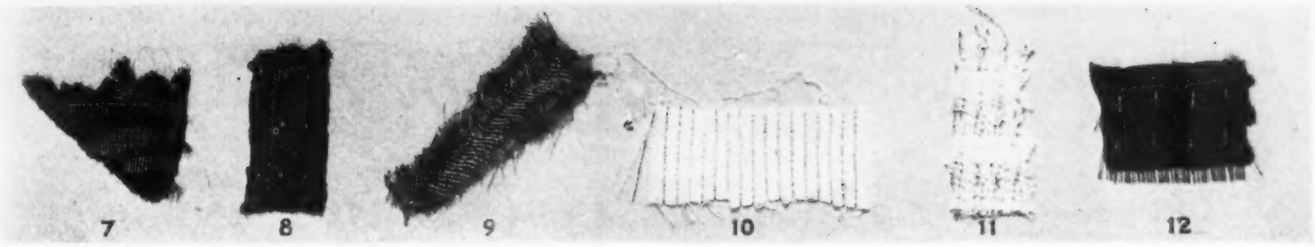
No. 13 is a larger sample of a fabric similar to No. 5, but the little metal-run pleats are flatter and closer together. It is from the French house Riqueur, which has launched many successful materials. It is called "Reveillon," which liberally translated means "New Year's Eve." No. 14 is a rich and formal lamé made by Colcombet and used by Marcelle Dormoy. It is indicative of one of the fashion trends of the season, a tendency toward stiffer weaves. Many materials with distinctly more body to them are employed. Patou and Chanel showed a number of gowns of Lyons velvet; Mainbocher and Maggy Rouff showed dresses of old-fashioned stiff slipper satin; Dilkusha offered a gown of wine red grosgrain which many American buyers purchased, and almost all of the great dressmaking houses sponsored models of taffetas and moiré. No. 16 is a lacquered satin printed with little gold dashes made by Albert Godde Bedin, from which Ardense, Worth, Mainbocher and Lucile Paray all made models. In black and gold it is especially chic.

There has been so much discussion of the Chinese theme in America that it is interesting to see how Paris employed it. It was evidenced principally in the silhouette . . . mandarin collars, buttoned up necklines,





No. 1. Fine silver chiffon brocade used by Mainbocher. No. 2. Gold shot pink moiré used by Vionnet and many others. No. 3. Metal-run satin used by Mainbocher. No. 4. Brown heavy sheer, raised dots in gold, used by Bruyère. No. 5. Sheer georgette with fine metal-run tucks. No. 6. Blue silk, metal stripes for use as blouse material. No. 7. Black and gold lamé matelasse used by Mainbocher. No. 8. Black satin, gold-flecked stripes, used by Lucile Paray. No. 9. Gold-shot gauze used by Vionnet. No. 10. Dull white silk fine gold lines used by Patou and Mainbocher.



Novelties . . .

NEW EFFECTS WITH LASTEX AND METAL

tunics, and pagoda flares on evening gowns. Then there was the use of metal and lacquered fabrics, and Chinese embroideries, and, of course, Schiaparelli's Chinese colors—peach-beige and lovely soft pottery tones, gold, rust, dragon green, lacquer red and a whole range of blues ranging dark purple shades to the pale grayed blues seen in old Chinese rugs. But Paris has not yet finished with this idea, and we may look for Chinese prints this spring.

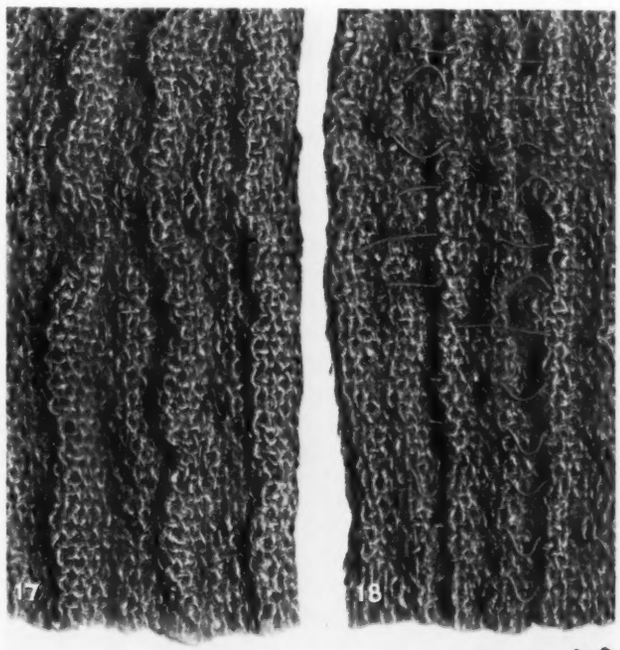
Speaking of Lastex, the Princess de Rohan, who under the name of Dilkusha has recently launched her own dressmaking establishment in Paris, said . . . "I love it! —it makes materials fit in a way they have never fit before. One can do the most surprising things with it." One of the surprising things she has done with it is to make what she calls an "evening sweater" of it, a knitted affair in which Lastex is combined with chenille, that has taken the fashion world by storm.

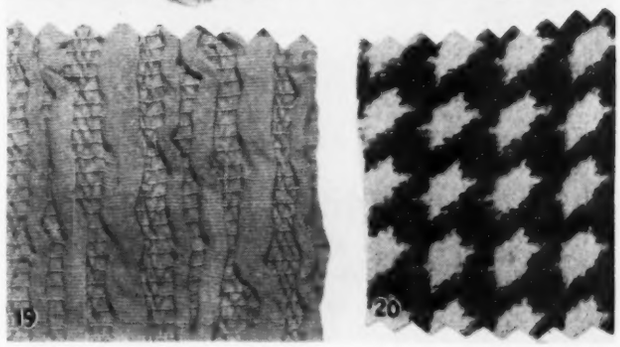
Schiaparelli's Lastex fabrics are sensational. The swatch marked Nos. 17 and 18 illustrates her new "treebark" idea, the fabric sensation of the winter openings. This idea has been developed in a number of ways but in every instance the fabric resulting actually resembles the bark of a tree. Most of the tree bark fabrics have Lastex in them, but not all. There is one heavy, dull synthetic in which the corrugations, just as deep and irregular as those induced by the Lastex, are simply the result of the weave. The material illustrated is of wool and synthetic yarn, made by Colcombet, of which the American representative is Langenieux. The photograph of the back of the material shows the little strands of Lastex. Wide ribbons in a similar construction are also made by Colcombet and used by Schiaparelli.

The material No. 19 is another development of the "treebark" idea but quite different from No. 17. It is from Maurice Vergne, and also is used by Schiaparelli.

Related somewhat distantly, to the "treebark" materials is Schiaparelli's "Champignon," a material with rather fine irregular, upstanding pleats which resemble the under side of a mushroom, an outstanding fabric novelty of the recent openings. Just what importance these extreme creations will have in the general trend of fashion it is difficult to say, but some clever American manufacturer is likely to evolve a more practical version of the same idea and score heavily with it.

No article on French novelty fabrics is complete this season without a reference to velvets. Makers have outdone themselves, and produced the most unusual and appealing ideas. Coudurier's "Panne Sauvage," a lightly crinkled panne velvet, is one of the most successful fabrics in France at present. Lanvin makes many of her best models of it. Mainbocher and Vionnet use checked velvet. No. 20 is an example from Mainbocher. Bagheera is still used by the best houses. Then there are smart diagonal effects, openwork stripes, brocade designs; the development of velvet novelties is legion.





No. 11. White synthetic, dust-like gold flecks, used by Lanvin. No. 12. Black and gold satin with velvet cross-bar. No. 13. "Reveillon" made by Riqueur, similar to No. 5. No. 14. Formal Lamé in ombre diagonals. No. 15. Wool fabric with metal pin dots made by Colcombet, used by Lelong. No. 16. Laquered satin with small gold print made by Bedin. No. 17. "Treebark" fabric using Lastex for corrugations; by Schiaparelli. No. 18. Reverse of No. 17 showing Lastex strands. No. 19. Lastex fabric of more formal character from Maurice Vergne. No. 20. Checked velvet used by Mainbocher.

Linking the Budgets

FOR SALES, INVENTORIES, AND MANUFACTURING IMPROVES CONTROL

By F. D. Manning

Bigelow, Kent, Willard & Co., Inc.

ANY textile manufacturer by taking into consideration the sound relations between sales, inventories, and manufacturing which are believed to be attainable in his line of business, can set up a basic plan of operation. By means of this plan he can measure what is actually accomplished, and can keep his costs to a minimum. This plan of operation, once established and being used mainly as a yardstick, need not be changed during a year, unless there is a major change in policy.

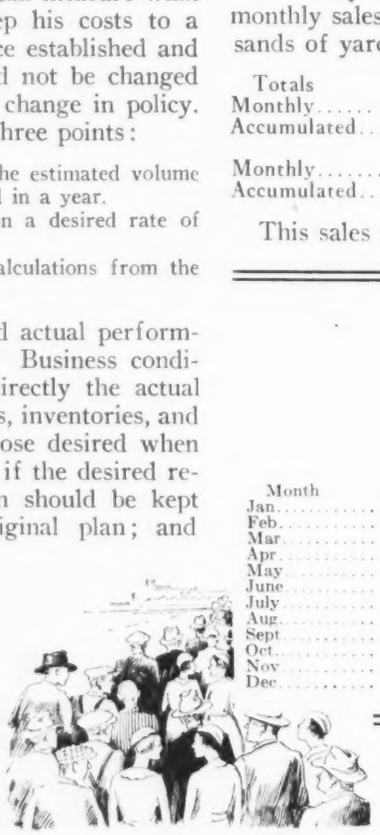
The plan of operation should cover three points:

1. A sales budget which has for a total the estimated volume which may reasonably be expected to be sold in a year.
2. An inventory budget which is based on a desired rate of turnover.
3. A manufacturing budget obtained by calculations from the two preceding budgets.

The plan of operating a concern and actual performances naturally will not be the same. Business conditions continually arise which offset directly the actual operation, and produce relations in sales, inventories, and manufacturing quite different from those desired when the plan of operation was set up. But if the desired relations are to be attained, the concern should be kept continuously directed toward the original plan; and revisions in original plan of operation must be made to bring this about.

There are, therefore, three items which disclose the relations of sales, inventories and manufacturing:

1. The original plan of operation.
2. Revisions of the plan.
3. Actual performances.



In order to make clear the advantages of forecasting relations of sales, inventories and manufacturing, a hypothetical concern is taken as example. A statement of the position of this concern at end of the first and of the second quarters will be given.

The concern has a reasonable expectation of selling 9,000,000 yd. of goods during the year. It normally has one sales peak, at which it makes 46% of its total sales in four consecutive months. Sales for future delivery are not great in comparison with spot sales.

Its product is manufactured in its own mill of 1,400 looms, with ample preparatory and finishing machinery. Each loom averages two cuts of 70 yd. each per loom per week of daytime operation. It can produce in the 52 weeks of the year 10,192,000 yd. As the sales expectation is but 9,000,000 yd., the mill need run but an avearage of 88% of full daytime capacity to produce all needed goods. (This 88% may be used as the operating basis for cost estimating in certain operations.)

The mill normally requires an allowance of four weeks, subject to capacity being available, to manufacture and finish for delivery. The period set-up for the year, by weeks, is:

Jan.	Feb.	Mar.	Apr.	May	Jun.
4	4	5	4	4	5
Jul	Aug.	Sept.	Oct.	Nov.	Dec.
4	4	5	4	4	5

An analysis of the annual expected sales volume into monthly sales might look as follows (all figures in thousands of yards):

Totals	Jan.	Feb.	Mar.	Apr.	May	June
Monthly.....	660	700	600	387	637	825
Accumulated.....	660	1360	1960	2347	2984	3809
	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly.....	950	1187	1124	875	575	480
Accumulated.....	4759	5946	7070	7945	8520	9000

This sales program hereafter will be called the master sales budget, which is Part A of the plan of operation.

Table 1—Relation of

	Sales					
	Master Budget		Revised Budget		Actual Sales	
		Accumulated		Accumulated		Accumulated
Month	Monthly	Total	Monthly	Total	Monthly	Total
Jan.	660	660	396	396	383	383
Feb.	700	1,360	504	900	469	852
Mar.	600	1,960	636	1,536	540	1,392
Apr.	387	2,347	445	1,981	....	....
May	637	2,984	669	2,650	....	....
June	825	3,809	743	3,393	....	....
July	950	4,759	....	....	....	....
Aug.	1,187	5,946	....	....	....	....
Sept.	1,124	7,070	....	....	....	....
Oct.	875	7,945	....	....	....	....
Nov.	575	8,520	....	....	....	....
Dec.	480	9,000	....	....	....	....

The process and finished goods inventory turnover which is desired and possible, but never attained, is six times per annum. This means, in its strictest interpretaton, that at the end of each month there should be a process and finished inventory equal to the sum of the expected sales of the next two consecutive months.

On this basis, the inventory on hand at the end of each month of the year, as made up from the master sales budget, would appear as follows (all figures in thousands of yards):

Jan.	Feb.	Mar.	Apr.	May	Jun.
1300	987	1024	1462	1775	2137
Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
2311	1999	1450	1055	1140	1360

In order to produce this inventory, assuming a normal manufacturing allowance of four weeks, the mill would have to produce each month the expected sales volume of the month following.

Each loom will, on an average, produce in a four-week period 560 yd., and in a five-week period 700 yd. Dividing the individual monthly master sales budgets by 560 or 700 yd., according to whether the month is one of four or five weeks, the number of looms per week running on a day-time basis, which would be necessary to produce the individual monthly master sales budgets, will be obtained. The result is as follows (1400 looms in mill):

	Jan.	Feb.	Mar.	Apr.	May	Jun.
Looms per Week..	1250	857	691	1137	1178	1696
	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Looms per Week..	2119	1636	1562	1026	685	1178

To attempt to operate a mill on this schedule of loom operation, with such abrupt changes, means overtime or slack work all through the mill, which is more costly than steadier operating. The fluctuations are too abrupt to be practical from an economical operating viewpoint. It is difficult to maintain normal four-week deliveries and render service to the trade under such conditions.

What is desired is the six-times inventory turnover at lower cost. Lower costs are attained in mill operation by a steady volume of production; therefore estimates should be made as to how the mill might be run to level operations and eliminate the expensive abrupt fluctuations. Calculations made from these estimates will show the effect of this leveling estimate on the inventory volume and desired rate of turnover.

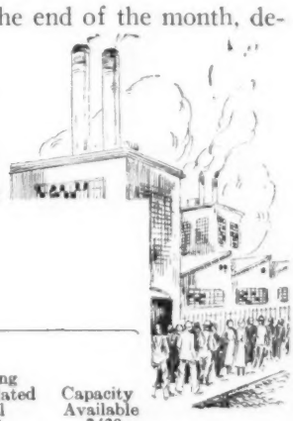
It is to be realized that in making the estimate of leveling the mill operation, consideration must be given from the monthly master sales budgets and will exert a definite effect on the inventory position, which effect must now be calculated. The business has one sales peak in the year, lasting four consecutive months, in which it does 46% of its total annual volume. It is clearly desirable to have on hand at the early part of this peak of sales a process and finished inventory sufficiently large in volume to be able to care for the sales demand. It is estimated, therefore, that at the end of June, which is in the early part of the sales peak, a process and finished inventory equal in volume to the expected sales for the two months of July and August, or 2,137,000 yd., will not be excessive, especially as sales for September are expected to be 1,124,000 yd. The picture then becomes (all figures in thousands of yards):

	Jan.	Feb.	Mar.	Apr.	May	Jun.
Master Sales Budget.....	660	700	600	387	637	825
Leveling Mfg Estimates.....	616	672	910	728	812	1015

Inventory at end of June, 2,137,000 yd.

	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Master Sales Budget.....	950	1187	1124	875	575	480
Leveling Mfg. Estimates.....	784	728	840	588	588	735

From inventory on hand at the end of the month, deducting sales and adding production of the next month, gives inventory position at the end of that next month. This calculation, repeated, gives an expected inventory on hand at the end of each month, for the year, as follows (all figures in thousands of yards):



Sales, Inventory and Manufacturing as of April 1

(All figures, excepting ratios, in thousands of yards)

Inventory				Manufacturing						
				Master Budget		Revised Budget		Actual Manufacturing		
Master End of Month	Actual End of Month	Master Inventory Ratio End of Month	Actual Inventory Ratio End of Month	Monthly	Accumulated Total	Monthly	Accumulated Total	Monthly	Accumulated Total	Capacity Available
1,149	1,550	1.75	2.65	616	616	496	496	580	580	2/28
1,121	1,656	2.10	3.03	672	1,288	604	1,100	575	1,155	3/25
1,431	1,791	2.49	2.93	910	2,198	636	1,736	675	1,830	4/29
1,772	....	2.33	....	728	2,926	700	2,436	...	....	....
1,947	....	2.14	....	812	3,738	803	3,239	...	....	....
2,137	....	2.00	....	1,015	4,753	783	4,022	...	....	....
1,971	....	1.75	....	784	5,537	...	....	...	....	....
1,512	....	1.44	....	728	6,265	...	....	...	....	....
1,228	....	1.61	....	840	7,105	...	....	...	....	....
941	....	1.76	....	588	7,693	...	....	...	....	....
954	....	1.72	....	588	8,281	...	....	...	....	....
1,193	....	1.76	....	719	9,000	...	....	....	....	....

equally to the requirements of the product from sales and styling viewpoints.

The master sales budget for the year is 9,000,000 yd. To remain in balance, the mill must produce the same volume as sales, and manufacturing should be the same in a year. An estimate, leveling the mill operation of looms to be run per week to produce 9,000,000 yd., might look as follows:

	Jan.	Feb.	Mar.	Apr.	May	Jun.
Looms per Week..	1100	1200	1300	1350	1450	1450
	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Looms per Week..	1400	1300	1200	1050	1050	1050

At the monthly output per loom of 560 or 700 yd., according to whether the month has a four or five week period, the estimated production would be (all figures in thousands of yards):

Jan.	Feb.	Mar.	Apr.	May	Jun.
616	672	910	756	812	1015
Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
784	728	840	588	588	735

The manufacturing output per month is quite different

Jan.	Feb.	Mar.	Apr.	May	Jun.
1149	1121	1431	1772	1947	2137
Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1971	1512	1228	941	954	1209

Compare this with the strict two months' sales-on-hand basis which produced the six-times inventory turnover (all figures in thousands of yards):

Jan.	Feb.	Mar.	Apr.	May	Jun.
1300	987	1024	1462	1775	2137
Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
2311	1999	1450	1055	1140	1360

The leveling of loom operation has resulted in an inventory forecast, which while starting with the same volume (2,137,000 yd.) at the same point (the end of June), is lower during declining sales at the last half of the year and higher during the period preceding the sales peak than is the strict two months' basis. It also

has produced a better estimated inventory turnover, being 6.2 times per year.

As sales and production must be the same in a year, their monthly averages must be the same. The individual monthly sales estimates varied from 52% to 158% of the monthly average. The leveling estimate gives individual monthly production of 79% to 135% of the monthly average, with no abrupt uneconomical fluctuations between any two consecutive months.

On the desired six-times inventory turnover on the strict two months' sales-on-hand on the first of each month's basis, the process and finished inventory on hand at the end of each month, in terms or ratio of months of expected sales covered, looks as follows:

Jan.	Feb.	Mar.	Apr.	May	Jun.
2	2	2	2	2	2
Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
2	2	2	2	2	2

A comparison of this desired ratio position with the ratios resulting from the process and finished inventory estimate, obtained by the leveling estimate, may be made by translating the estimated inventory, at the end of each month, into consecutive ensuing months of expected sales, until exhausted. For example, the estimated process and finished inventory at the end of the January period (1,149,000 yd.) is equal to the 700,000 yd. expected sales for February, and 75% of the 600,000 yd. expected sales of March. It has a ratio of 1.75 months.

The inventory ratio for the leveling estimate is as follows:

Jan.	Feb.	Mar.	Apr.	May	Jun.
1.75	2.10	2.49	2.33	2.14	2.00
Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1.95	1.44	1.61	1.76	1.72	1.76

These inventory ratios disclose that the rate of turnover is better than hoped for from June to February, and higher from February to June. This is caused by the leveling of loom operation, by manufacturing a small proportion of staple goods in advance of sales requirements. The ratios have a further value as a means of measuring the relation of sales and inventory, which will be developed later.

Having satisfied all requirements, the estimated process and finished inventory becomes the master inventory budget (Part B) and the leveling estimate of mill operation becomes the master manufacturing budget (Part C) of the plan of operation. The plan of operation is thus completed. It is a forecast for a year, based on a reasonably attainable sales volume.

The desired inventory turnover is attained, but not by keeping a low inventory. The budget of process and finished inventory for the end of June is 24½% of the total annual sales, while at the end of October it is but 10½%, an excellent illustration of the point that sales and inventory have definite desirable relations. There should be, as a result of the plan of operation, sufficient inventory on hand, when needed, to enable the selling of a volume of sales reasonably possible for the year. The mill, being able to make normal four-week deliveries, has the prospect of steadier operation, with its corresponding lowering of costs, without immediate further lowering of wages. Also, there is a basis upon which to calculate overhead expense, and its absorption by cost of production.

In the example of the hypothetical concern, assume the actual process and finished inventory on hand on Jan. 28 was 1,550,000 yd. This quantity is equivalent to the master sales budgets of February, March, and 65% of April. Its inventory ratio is 2.65. The master inventory budget for January was 1,149,000 yd. and the master inventory ratio was 1.75.

There develops here the use and value of the inventory ratio as a guide to relations of sales and inventory. The volume percentage of actual inventory to master inventory budget (1,550,000 ÷ 1,147,000) is 135%, which is to say that, on the volume basis, the concern is starting the year with an inventory which is 35% too large. However, when the actual inventory and master inventory budget are translated into inventory ratios and compared, the actual inventory is found to be $\frac{2.65}{1.75}$ or 151%, which is to say that, in terms of future months of sales covered, and based on a desired six times turnover of inventory, the inventory is 51% too large at the beginning of the year.

Capacity for normal finished delivery was available at the end of four weeks as reported by the mill. At the same time, prospects for sales for the immediate future do not look very bright. With the actual inventory too large and sales prospects not so good, there will have to be revisions made at once from the figures of the plan of operation.

Revisions of the master budgets may be made in the master sales budget and in the master manufacturing budget, or in both. The inventory position is determined as a result of these revisions.

Revisions, therefore, are made, showing the hopes and plans of the first quarter as follows (all figures in thousands of yards):

	Sales Revised Budget		Manufacturing Revised Budget	
		Accumulated		Accumulated
	Monthly	Total	Monthly	Total
Jan.	396	396	496	496
Feb.	504	900	604	1100
Mar.	636	1536	636	1736

At the end of the first quarter, the actual performance for the concern was (all figures in thousands of yards):

	Sales Actual		Manufacturing Actual	
		Accumulated		Accumulated
	Monthly	Total	Monthly	Total
Jan.	383	383	580	580
Feb.	469	852	575	1155
Mar.	540	1392	675	1830

Revised budgets are now made up, showing the hopes and plans of the second quarter; and the standing of the concern at the end of the first quarter in its relation to sales, inventory, and manufacturing is shown in the accompanying table.

These figures show, then, an original plan of operation, designed to give definitely desired and reasonably attainable relations of sales, inventory and manufacturing; revisions made necessary by actual business conditions; and in addition, they show the actual performances.

[*In a future article Mr. Manning will discuss the use of the Gantt chart for the graphical presentation of the relation between sales, inventory, and manufacturing.*]

Progress in Research

REPORTED AT ANNUAL MEETING OF U. S. INSTITUTE

THE annual meeting of the U. S. Institute for Textile Research focussed the spotlight upon the work being done by the research fellows under the auspices of the Textile Foundation. This promises to be a source not only of research information but of research-minded man-power for the industry.

The arrangement whereby the results of this work are abstracted in the monthly publication of the Institute is a mutually excellent one. It is a working example of what this writer had in mind when he stated in these columns in August, 1930, that "the Textile Foundation and the U. S. Institute for Textile Research, instead of conflicting with or duplicating each other, can be coordinated toward the prompt accomplishment of the purpose each has in mind."

Too high a tribute cannot be paid to the officers of the U. S. Institute for carrying on under the distressing conditions of the last few years; or to the directors of the Foundation for developing a high type of research effort.

The furtherance of the objectives of both organizations depends now upon the active interest of individual manufacturers. In our opinion every progressive textile executive should be a member of the U. S. Institute, in order that he can become personally informed of the work being done in textile research and can apply its results to his own problems.—*Editor.*

LEADING a symposium on the status and correlation of current textile research in this country, at the annual meeting of the U. S. Institute for Textile Research, held Nov. 2, in New York, Dr. Vannevar Bush, vice-president and dean of engineering, Massachusetts Institute of Technology, analyzed the work which is being done by fellows of the Textile Foundation and other investigators. Research supported by the Foundation and now under way, according to Dr. Bush, includes studies on the structure of fibers, durability of fabrics, mercerizing of cotton, cause of wool felting, and development of new research apparatus. These studies comprise both fundamental research and applied research which should have immediate practical application. After commenting on the fact that a large part of the research under way is under the auspices of the Textile Foundation, educational and governmental institutions, and companies serving the textile industries, Dr. Bush stressed the need for a greater amount of applied research conducted in individual textile plants. Likewise, the individual plants should give some attention to general research in order to understand what fundamental progress is being made and to contribute to the general fund of knowledge.

All officers and directors were re-elected, with the following exceptions: In the place of W. Robert Blum, resigned, Alban Eavenson, president of Eavenson & Levering Co., Camden, N. J., was made vice-president, and A. L. Lustig, president of Apponaug Co., Apponaug, R. I., was made director. H. M. Chase, superintendent of Riverside & Dan River Cotton Mills, Danville, Va., was elected as a director to succeed R. R. West. The research committee was enlarged by the election of Mr. Lustig; Mr. Eavenson; and P. A. Johnson, president of Aspinook Co., Jewett City, Conn. Dr. H. D. W. Smith, treasurer of A. M. Tenney Associates, New York, was elected vice-chairman of this committee. A number of new members were elected to both contributing and annual memberships.

Following luncheon, Hon. Francis P. Garvan, president of the Institute, made the president's annual address, in which he emphasized the part which American research has played since the war in making us potentially independent of foreign countries. He recommended that the same principles be adopted by individuals, urging that research men be originators rather than copiers. Views opposed to some of Mr. Garvan's were expressed by Dr. H. D. W. Smith, who stated that economic waste through duplication of research effort and a slowing down of progress would result from failure of research men in this country and foreign countries to exchange information and ideas. Research men, he believes, should be expected, and are fully entitled, to climb from the shoulders of those who have preceded them. He advocated that all men beginning a research undertaking compile a complete bibliography of everything that has been published on the subject.

Ephraim Freedman, of R. H. Macy & Co., New York, recommended that more than one research man should be induced to study the wear resistance of fabrics in order that results on this work, so important to consumer acceptance, be speeded up. He outlined a method of procedure which might be followed to advantage, including an individual study on the effect of each property of the fiber, yarn, and fabric on the resistance of the fabric to abrasion, with a later correlation of these results. Dr. Smith believed such work should begin with the study of a collection of wearing and worn fabrics to determine why and how the damage was caused.

Dr. Robert E. Rose, of E. I. duPont de Nemours & Co., Inc., pointed out that the results of research should be presented to the practical mill man in such a way that he can understand what they mean and can make use of them. Franklin W. Hobbs, chairman of the Textile Foundation, summarized the activities of the Foundation in supporting research fellows who are studying various problems connected with the industry, in publishing information on scientific research and on textile merchandising, and in investigating the courses of study provided in the different textile schools of the country. Charles H. Clark, secretary of the Institute, read a report of research conducted recently by G. Gordon Osborne, fellow of the Textile Foundation, which disclosed that kemp—long regarded as a malformation of normal wool—is a normal fiber with a cellular structure. Also made public at the meeting was the development by Textile Foundation fellows working under the direction of Dr. Arthur C. Hardy, Massachusetts Institute of Technology, of an improved type of spectrophotometer which enables the specification of colors in standard terms without introducing a variable human equation.

Full-Fashioned Selvages

BEGINNING DISCUSSION OF A SUBJECT NOT BROADLY UNDERSTOOD

By M. C. Miller, M.E.
Mechanical Engineer, Manville, R. I.

◆ *Why do various knit fabrics curl? This question and others are answered in the accompanying article, in which M. C. Miller takes up a full-fashioned hosiery subject he has not previously discussed—selvages. Although this article and those which are to follow are actually a continuation of Mr. Miller's series on full-fashioned machines and their operation, they bear only an indirect relation to what has been published before. Therefore new readers who wish to benefit from this instructive treatise will find it possible to begin at this point.**

FULL-FASHIONED hosiery machines, as well as all other types of flat knitting machines, produce fabric having selvages. As the selvages form the portions of the stocking which are later sewn or looped together, it is important that they be even-waled and properly tensioned in order to make possible smooth, even-appearing seam sutures. It is difficult to produce perfect selvages on a Cotton-system machine; and while it is theoretically possible to adjust the machine to do this and a machine may so operate periodically, the constant production of perfect selvages is practically impossible.

In order to understand how selvages are formed, it is necessary to know the loop formation. This is shown in Fig. 56, in which *a* is a cross-section of the needle shanks, and *b* is the last left-hand selvage loop that has been formed. The yarn carrier is outside the scope of the drawing, somewhere to the right—that is, at the right-hand selvage. The direction of carrier movements is shown by the arrows *A*. As the direction of carrier traverse is always opposite in successive courses, it follows that the selvage loops are not alike in each succeeding course, as is clearly shown in the drawing.

While a few courses of fabric can be knitted on a properly adjusted full-fashioned machine without the use of a fabric take-up, it is absolutely necessary in commercial practice to have the fabric drawn to the back of the needles by a resilient means, with which all machines are provided. This causes a narrowing of the finished fabric, particularly pronounced in the vicinity of the last knitted course, as shown in Fig. 56. The selvage wale in the drawing clearly indicates a continuous reduction in the width of fabric as the courses become further removed from the last knitted course held by the needles. The fabric finally reaches its narrowest width, as indicated in course *B* (Fig. 56). It cannot become narrower, because the needle loop heads, as shown at *c*, have been drawn into contact; that is, because the sinker loops *d* cannot become narrower. As narrowing the fabric lengthens it, the fabric cannot be lengthened any more than is shown in the drawing, with the specific tension applied. Less fabric tension might not cause the loop heads *c* to come so nearly in contact, while more tension might bring them into actual contact or distort and tighten the loop heads *c* and *d* still further, and in this manner permit the fabric to become narrower and therefore longer.

Even if it were possible to knit without a fabric take-up, some elongation and consequent narrowing of the fabric, as it leaves the needles, would take place, due to a natural curving of the sinker loops *e*. It will be noted that the loops *f* in the course next to the needles are not curved. This is due to there not being sufficient yarn in a course of relatively small loops, as shown, to permit the loops which precede a course held on the needles to curve naturally, as any unrestrained yarn would do if bent as at *f'* (Fig. 56).

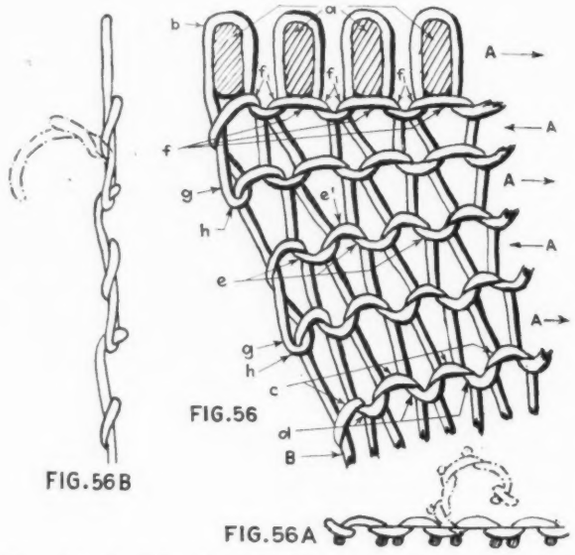


Fig. 56. Full-fashioned selvage, showing contraction of fabric. Fig. 56A. Cross-section of fabric. Fig. 56B. Edge of fabric.

The effect upon the knitting elements, particularly the needles, of this lessening of the fabric width is a tendency to disalign them, particularly the last active needle if it is of fine gage. Great care must be exercised to reduce the fabric take-up pull to the irreducible minimum, and yet effect a drawing of the previously formed needle-wale loops *f* toward the back of the needles as the hooked end of the needles moves upward during the casting off of the previously formed course of loops. If only a slightly excessive fabric tension is applied, not only the end needle, but sometimes the needle inwardly adjoining it, is disaligned. This seriously affects the formation of

*For dates on which previous articles appeared, see page 54 of the April, 1933, issue. An earlier Miller series on the past, present, and future of various knitting mechanisms, which ran in TEXTILE WORLD from 1926 to 1929, has been reprinted in book form by McGraw-Hill Book Co., New York, under the title "Principles of Knitting."

selvages and the normal knitting and narrowing operations of the needles.

The elongation of the fabric, due to the action of the fabric take-up, also causes the selvage edges to curl upward and hence inward. This is due to the fact that the yarn forming the selvage is, as in any other plain-loop filling-knit fabric, twisted. The twist shown at *g*, Fig. 56, causes the loop *g* to roll in the direction of the arrow *h*. This curling would be barely noticeable if the fabric were not tensioned. As the fabric, however, must be put under tension in a direction parallel to the wales, with the resultant narrowing and distorting of the sinker-loop heads, as shown at *d*, the needle-loop heads *c* move into the more curved angular shapes *e* and in this manner tend to curl or bring the back of adjoining portions of fabric together (the back of the fabric being shown upward in Fig. 56).

While such curling cannot take place in the main body of the fabric, the wales near the unsupported selvage or edge of the fabric are not restrained from doing this by the flattening effect of the take-up roller and needles, so that these selvage edges curl inward as shown in Fig. 56*A*. The direction of curling is always toward the back of the fabric in a plain filling-knit structure, due to the sinker loop *e* (Fig. 56) going under the needle loop *e'*. If the yarn of the sinker loop *e* were to go over the yarn of the needle loop *e'*, as for instance is the case in alternate wales in one-and-one rib fabric, shown in Fig. 57, no curling would result, as a wale of one type alternating with a wale of another type counteracts the other insofar as curling is concerned. This is the reason why rib fabrics, and particularly narrow-waled rib fabrics, have no curling tendencies.

To illustrate further this non-curling characteristic of alternately drawn wales or courses of loops, I would refer the reader to another type of non-curling fabric, shown in Fig. 58. This is known as links-and-links fabric. Alternate courses are drawn through preceding loops in successive courses in opposite directions; so that, while one course tends to curl the fabric in one direction, the next course tends to curl it in the opposite direction, and a non-curling fabric results.

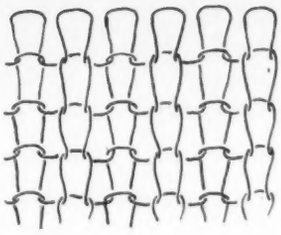


Fig. 57. One-and-one rib fabric.

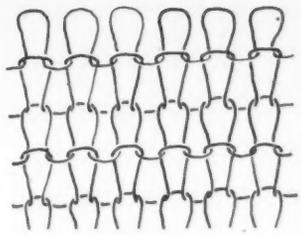


Fig. 58. Links-and-links fabric.

While we are considering fabric curling, it may be well to point out that plain filling-knit fabric curls also course wise, toward the outside or face of the fabric, as shown in Fig. 56*B*. This is due to the loops having been drawn through preceding loops from the back to the front or face of the fabric, thereby kinking the yarn, as shown at *f'*, Fig. 56, in a direction from the back to the front of the fabric.

Rib fabric, shown in Fig. 57, will not curl coursewise. The fabric shown in Fig. 58 will curl coursewise very little and then noticeably only in the last course; the direction of this slight curl is dependent upon the direction in which the last course was drawn through the preceding course.

Combed Group TALKS PREPARATORY PROCESSES

ROUND-TABLE discussion of cotton opening, mixing and cleaning problems in combed yarn mills featured the fall meeting of the Gaston County Division of the Southern Textile Association, at Community House, A. M. Smyre Mfg. Co., Ranlo, N. C., Oct. 20. Marshall Dilling, executive secretary of the Association, conducted the session.

Consensus of opinion was that the 1932 crop of staple cotton from the Mississippi Delta was better in breaking strength and character than the 1931, but still not up to the standard of previous years. Delta crop this year was said by one member to be about equal to 1932. Five men who had already used some 1933 crop staple cotton from Carolina area were of the opinion that it is not as good as last year's, either in tensile strength or average staple length.

Whereas several years ago it was felt advisable to open long staple cotton three or four days in advance of starting it into the mill, it was pointed out that regular practice now is to open from 15 to 20 bales at one time and feed directly into the opening equipment. This change was said to be brought about by installation of better opening equipment. William McLoud, superintendent, Rhyne-Houser Mfg. Co., Cherryville, N. C., stated that in opening 20 bales he preferred to open 10 bales at one time, so that when feeding from near the top on 10 bales, the operative would be taking cotton from the middle of the other 10 bales.

Since Egyptian cotton comes in bales of much greater density, it was pointed out, it is advisable to allow the cotton to stand or "age" for two or three days after the bales are opened. One member reported that in running 1 5/8-in. Egyptian, he opens eight or ten bales at a time, allows it to age for about one day and then feeds it into an upstroke cleaner. His mill is not equipped with a bale breaker. It was suggested that the Egyptian cotton be run through a coarse bale breaker and then allowed to stand in a bin for several hours before going to the next process.

The vertical opener was said to be better than the horizontal cleaner, although possibly not any better as a cleaner, while the C. O. B. type machine was considered satisfactory for removing small trash. Greater use of cleaning trunks was indicated by several members.

Feeding pickers light and allowing fewer beats per inch was favored, although the question was said to depend largely upon the grade and condition of the cotton. D. R. LaFar, general superintendent, Ranlo Mfg. Co., stated that the cotton should be cleaned to standards required by the individual mills and beat as little as possible during picking.

Chairman Dilling was of the opinion that the synchronized picker change-over equipment produces results about as good as those obtained with the standard single process machines. All members who had installed single process equipment, either new machines or synchronizing attachments, reported an improvement in evenness of lap, as well as greater production, and felt the investment was justified.

The Buckley type beater was preferred by several members for the breaker picker as it was found to produce a softer, better worked lap. Others recommended two-blade beaters for the breaker picker. It was generally agreed that the Kirschner beater is the most satisfactory type for the finisher picker; points on this type should be kept in condition. One member stated that he sets this type of beater with a clearance of about 1/8-in. on the finisher picker for 1 5/8-in. cotton. The best place for applying spraying oil to cotton was said to be behind the feed rolls of the breaker picker, or on the finisher picker at the last beater.

Throwing Silk and Rayon

EXTRACTING AND FROM CHEMICAL

IN the tub method of silk soaking, the yarn when removed from the soaking bath contains on an average 2½ to 3 times its conditioned weight of soaking liquor. This carriage of liquor can be reduced somewhat by tapping off the soaking system and allow the soaking liquor to drain away; or that amount which is not held by capillary absorption or adsorption can be collected by suspending the soaked mass temporarily above the soaking tub. At times yarns in this wet condition have been subjected to hand or mechanical squeezing, but this practice should be discouraged, as the number of broken filaments that will result are of more consequence than the saving of a few gallons of liquor for a possible re-use.

Common Extractor Practice

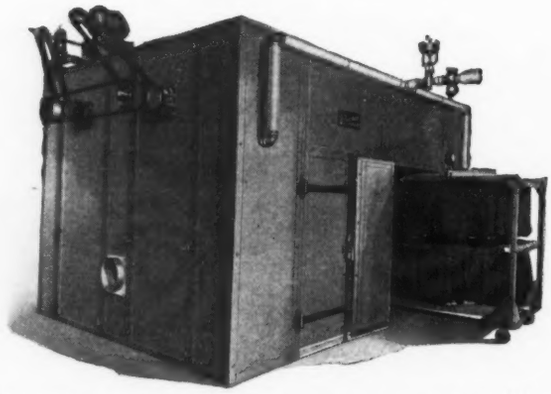
It is common practice to reduce the liquor content of wet yarns by means of the centrifugal extractor. The rotation of the usual centrifugal is between 750 and 950 r.p.m. These speeds result in a centrifugal throw of the yarn against the periphery of the basket amounting to an average pressure of 400 lb. per sq. in. This squeezing of the yarn against the inner walls of the perforated basket allows that amount of liquor which is not held by physical forces greater than the mechanical forces that throw off the liquor to escape through the walls of the basket.

If the prior soaking operation has been complete, the liquors thrown off by the centrifugal are of very low concentration, generally of the concentration as drained off from the soaking bath. The greatest amount of liquor is thrown off per unit time at that point where the centrifugal attains maximum speed. The rate of flow then rapidly dies down to a point where just a continuous thin stream flows. From this point, if the centrifugal is run indefinitely, an investigation of the droplets will show an increase in concentration of the liquor. This is due to the fact that the soaking oils tend to slip over the surface and when they build up enough to form droplets, they are thrown off.

Depending on the load in a centrifugal machine, the time to centrifuge it depends on what the throwster wishes to obtain. If he wishes to leave on his yarn the maximum amounts of lubricating and sizing agents that will add to the weight of his fabricated yarn, the actual water content should not be "spun off" too completely. If oil is being thrown off from oil-soaked rayon and is to be recovered for re-use, the machine should be run to that point where the weight increase of the yarn due to oil retention is found to be reduced to an economic amount.

Controlled Extraction

Generally, the throwster "whizzes" his yarn in the centrifuge to that point where the conditioned yarn contains 100% liquor content. The time that any machine takes to accomplish this liquor reduction should be determined by actual weighing tests on the yarn. When this time has been fixed for a definite centrifugal, an automatic timing device should be attached to the machine to control it definitely from start to finish. This time, governing the throw-off of liquor from the yarn down to a certain predetermined liquor-content point, is of the greatest importance in the success of properly made threads and fabrics. The success in producing a good rayon pebbled crepe depends on the amount of sizing in the soaking operation and to what extent the size remains on the yarn after the centrifuging. For final drying, 110 lb. of conditioned yarn should carry close to 130 lb. of liquor to give good sizing.



One of several types of chamber dryers for silk and rayon skeins

Extraction Limits

The results obtained from this partial drying by centrifugal extractor depends on the way the yarn is bundled and located in the basket. This part-drying method is economical only in so far that excess liquor is thrown off. The extended running of the machine beyond the natural throw-off of liquor is uneconomical and not the function of centrifugal extraction.

After the yarn is removed from the extractor, it is opened completely or partially and hung up with some system in mind so that the yarn can be uniformly dried to a low moisture content. It is necessary to dry the yarn for several reasons. Wet gum silk, due to its easier elongation when wound under usual winding tensions, will yield a bobbin that will be hard and will cake when dried. Wet silk, when held in masses awaiting winding, often mildews or leaves a receptive mass for the growth of animal life. Wet masses of silk heat rapidly due to bacterial or fungicidal decomposition, yielding ammonia vapors and discolorations and tendering of silk that cannot be remedied. Other factors, such as the stripping of gums, reforming of gum spots, setting of tint, oxidation, and rancidity, all point to the fact that silk should be dried in a regular and systematic way. It is well under-

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National Oil Products Co.
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DRYING ENGINEERING STANDPOINT

stood that rayon must be uniformly dry (under 9.91% moisture content) before it is wound; otherwise the excess stretching will be so pronounced that the yarn will be of little value.

Air Drying

The simplest method of drying is air drying in the open winding room. The silk is opened up and hung on poles or racks, and the normal motion of the air of the room will help in the uniform drying of the silk. This process is slow, varying from 18 to 24 hr. in a well-heated and ventilated winding department to 72 hr. or more in rooms where natural drying factors are not balanced. In spite of the long time necessary for natural air drying, the throwster is usually repaid by enjoying certain advantages not obtained by faster methods of drying.

A solid dries at the surface; and therefore the thinner the mass and the more open it is, the more rapid the drying. For this reason, yarns that are to be dryed should be hung from drying rods which offer as little contact with the skeins as possible; and the skeins should be spread out and opened up, leaving a definite clearance between each skein.

Yarns for normal air drying should be kept in operating departments, like a winding floor, where natural air circulation and the circulation created by moving parts and people will cause the continuous replacement of unsaturated air. The temperature factor is important, as cool air entering a room and being heated will become more unsaturated and thus will have a greater capacity for carrying water vapor. Advantage is taken of this heating up of air and the silk is often suspended high in the room to facilitate more rapid drying.

Continuous Drying

Based on the ever-increasing demands on the throwster, various engineering concerns have built drying equipment, which—by pre-drying of air, increasing the volume of flow, controlling of temperatures, concentrating uniformly hung yarn in economic spaces—has speeded up drying many fold. In the throwster's mill can be found all stages of drying equipment from natural-air room drying to continuous drying methods of the highest efficiency. One of several types is shown in the accompanying illustration.

Drying is an important function in silk throwing, but little study has been given to the effects of drying equipment on the producing of superior yarns. In the case of gum silk, drying should be carried to a point where the yarn when placed on the winding frame will dry uniformly to a moisture content in equilibrium with the winding room. An average moisture content of wound yarn is 8%. Thus, if drying by natural air or forced air methods is used before winding, it is only necessary to reduce the moisture content of the yarn to between 30 to 40% to yield a yarn that will rapidly "whip down" on the winding swift to 8%.

In forced systems of drying where air temperatures of 160° F. or higher are used, the possibility of drying the outer surfaces faster than the water can diffuse from the inner mass, results in a yarn that on winding yields overstretched sections. Also, the effect of high temperatures on yarn surfaces is to oxidize the oils rapidly, and in some cases to cause tender spots, setting of tints, and resetting of gum spots. Economically, yarns should only be dried to that point where the further work of winding the yarn onto bobbins will yield a moisture content not lower than 8%.

In continuous drying systems, the through-put of the yarn is so arranged that as the properly hung skeins are entered into the drying zone, the temperature is gradually raised to a maximum as the yarn proceeds, and the final yarn finds an exit from the dryer at any predetermined moisture content; e.g., 15%.

Low Temperatures

There seems to be much in favor of low-temperature drying of yarns, or at least in the gradual increase in temperature of the system as the yarn loses its moisture content, as against the placing of cold yarn in a system that is preheated to a definite drying temperature. These advantages are especially noticeable in the drying of rayon sized with gelatin or glue. When rayon is hung up on the dryer rack, it is usually shaken out so that each thread hangs free and independent. Now if this yarn is placed directly into a dryer which is set at 165° F., the surface dries very rapidly, which results in a hard, flinty structure on the yarn. The internal moisture as it diffuses to the outer surface is evaporated from cracks and crevices at the surface and leaves a rather harsh yarn.

On the other hand, if the drying rack is allowed to stand in the open room for a few hours before it goes to the dryer, the surface size has an opportunity to adjust itself, as it naturally dries and allows the moisture to come through the gelatin sheath in a way that least disturbs the coating. When this yarn, which has lost some of its moisture, is now placed in the dryer, the conditions have already been set up to allow the proper diffusion and evaporation of water from the sized surface. Such dried yarn is more flexibly seized and is generally absent from "permanent wave" marks on the thread.

The presence of moisture in yarn beyond a certain limit adds to the bulk of the yarn. Where yarns are wound wet onto spools, on drying out, cracks appear which involve the yarn and cause breaks. Further, when yarn is wound wet, it elongates; and on drying it tends to shrink back to its normal length. This results in "hard" bobbins.

Over-dried Yarns

When yarns are over-dried, which is not uncommon in the forced drying systems, soaking agents, which are on and in the yarn, are also dried. When this yarn is subjected to normal atmospheres, it is expected to regain a moisture content in equilibrium with the surrounding atmosphere. This regain of the silk or rayon to normal conditions is retarded if the soaking materials become so greatly denuded of water that they form on the yarn protective coatings which act as waterproofing agents. On the other hand, regain is aided if the soaking agents themselves have a water demand.

WEAVER AND KNITTER FIND SIMPLE TESTS GREAT AID IN *Handling Rayon*

By Alfred E. Sunderland

A CERTAIN textile mill had been running for twelve months on a special rayon construction. No trouble had been experienced, and the percentage of seconds over this period had run remarkably low. Suddenly the amount of seconds jumped to about five times the average quantity. Such a serious change demanded immediate investigation and solution. The usual machine tests for tensile strength showed no appreciable difference in the yarn; careful examination of the yarn failed to disclose any increase in broken filaments or variation in twist. However, when the yarn was tested for elasticity, it was found that the yarn which had been giving good results had an elasticity of 12.6%, while the new lot which was causing the trouble had an elasticity of 18%.

It was evident that in some textile operation the yarn was being subjected to a tension which was excessive for this kind of yarn. In this particular case, the fault was found to be in the spooling; and when the weights used to brake the swifts in the spooling department were reduced, the amount of seconds—even when using this more elastic yarn—immediately dropped nearly to normal.

The experience of this mill—which is typical of many which could be quoted—shows how essential it is that the weaver and knitter have a working knowledge of the characteristics of the several synthetic yarns and of the various test methods for determining these properties.

Important Properties

Important among the properties of rayon and other synthetic yarns are extensibility, elasticity, and elongation. Unfortunately, these terms have been used very loosely; and to the average mill man mean about the same thing. Believing that they are clear and accurate, and if generally adopted would be helpful in coordinating the work of other investigators, the author submits the following definitions:

Extensibility—The percentage stretch obtained in the strength testing of wet rayon, reduced to terms corresponding to those obtained on the Suter machine.

Elongation—The percentage stretch obtained in the strength testing of dry rayon at a temperature of 70° F. and a humidity of 60%, reduced to terms corresponding to those obtained on the Suter machine.

Elasticity—The percentage stretch obtained by the following method: Fasten a 10-gram weight to one end of a length of yarn; suspend the yarn and allow it to untwist; shorten the yarn until it is exactly 50 cm. long; attach to the end of the yarn a 175-gram weight; calculate the percentage stretch.

In making the elasticity test, it is best to keep temperature and humidity constant for records which are to be used over a period of time; but for comparative tests made at the same time on a number of samples, this is not compulsory. The 175-gram weight is employed for testing yarns of 150 denier; when testing 100-denier yarns, a weight of 125 grams should be used; and with other deniers, the weights should of course be in proportion.

The reason for the selection of these weights is that they afford a truer indication of the physical condition of the yarn than is obtained by the elongation figures on the strength testing machine. This test also gives a better indication of the weak places in the yarn, as the yarn is more directly under observation. Thus, if the yarn will not support the standard weight, the character of the break can be detected; that is, whether it is a sharp break due to a weak spot in the yarn, or a gradual shear due to individual filament defects.

Shrinkage Test

The elasticity test is not complete, however, without a shrinkage test. This is easily made by taking a measured length of the yarn, wetting it in water, and allowing it to dry without tension. Some yarns shrink quite considerably. A quick way of performing this test, which is sufficiently accurate for practical purposes, is to reel on the same swift and at the same time 450-meter skeins of the yarns being tested. Next wet out the skeins and hang on a rod in the air until dry. The skeins can then be laid flat on a table, and the difference in length can be measured.

It should be noted that in the case of the synthetic yarns the individual filaments do not consist of small lengths of fiber twisted together, but are continuous lengths; therefore any stress or strain exerted at one portion of the yarn is transmitted for a considerable distance without diminution in effect. Also, it should be pointed out that the synthetic yarns have a wide range of stretchability, some varying from zero in a perfectly dry state to 35% in a moist condition. This peculiar property of stretching with varying degrees of humidity is further complicated by the fact that the fiber begins to contract when the humidity is reduced; and if this contraction is prevented in any way, the yarn takes up internal stresses which produce various physical changes and modify its dyeing properties.

The property of stretchability, in addition to being variable according to the humidity, is modified by the permanent set of the outside sheath or skin of the rayon filament. Permanent set is a property which is affected by the actual speed of coagulation of the cellulose in the spinning process, the temperature and length of time taken in drying the wet yarn, and the number of times the yarn is wet out and dried. Seemingly, the action of wetting out releases all tensions previously put upon the yarn; and when the yarn is allowed to dry, with or without tension, an action takes place, which might be unscientifically described as a gluing of the cellular struc-

ture of the rayon, thus producing a fixed physical form which is disrupted only with difficulty.

Permanent Set

The permanent set is observed when testing the tensile strength of the rayon. It will be noticed that as the breaking strain is applied to the yarn, the elongation of the yarn is very small up to a certain point, and then increases rapidly up to the point of breaking. The strain measured in grams weight required to reach the point of overcoming this permanent set varies with different yarns, and might be taken as a safety factor in adjusting the tensions to which the rayon is subjected in spooling, warping, quilling and other operations. Some yarns show a uniform stretch proportionate to the strain put upon them, while others are uniform up to a certain point, and then increase in length very rapidly up to the breaking point (See Fig. 1).

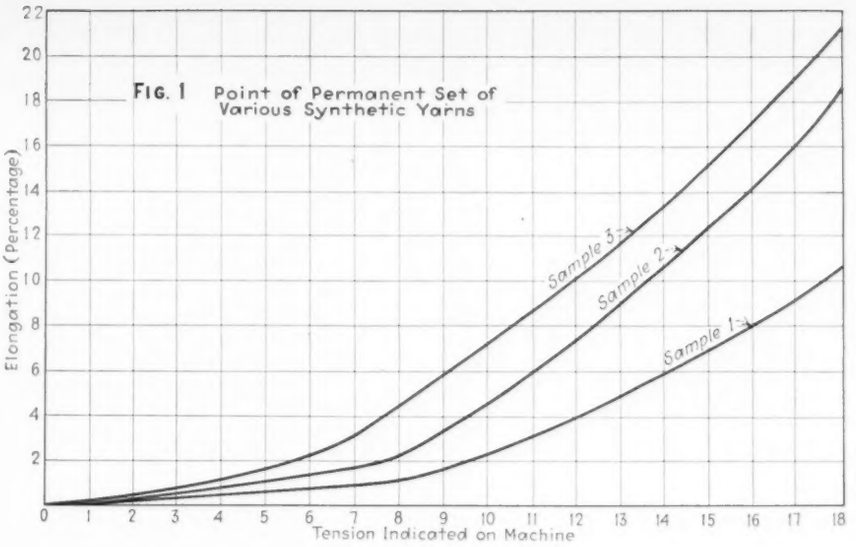


FIG. 1 Point of Permanent Set of Various Synthetic Yarns

These figures should not however be used arbitrarily for determining the properties of the yarn for textile processing, because a yarn which has been unduly stretched during manufacture will give a low elongation, and yet when woven into goods, and finished, may show far more bars and shiners than a yarn giving a greater elongation on the testing machine.

In testing rayon yarn, to make the tests complete and to furnish a definite groundwork for deduction as to the cause of any trouble, tests should be made at regular intervals from one end of package to the other, taking care that the yarn is continuous and that no knots occur. Below is given the results of tests made on four cones, each made by a different rayon manufacturer.

Elongation Tests on Four Samples of 150-Denier Coned Rayon

A	B	C	D
23.6	20.0	16.9	14.7
23.1	19.8	16.4	13.7
22.6	*19.3	16.3	18.2
23.0	22.5	15.0	18.3
22.9	22.1	14.7	19.4
23.5	22.1	13.9	20.1
24.2	21.8	* 9.5	21.0
23.0	21.9	18.1	20.4
23.4	22.6	17.6	20.1
22.7	23.1	18.3	19.5
23.6	23.0	17.7	19.0
23.3	23.4	17.7	18.4
23.5	23.0	17.2	18.0
23.4	22.8	16.2	17.1
23.4	22.9	16.0	*16.3
25.5	22.4	15.5	14.3
*26.1	21.7	15.1	13.4
24.5	21.5	13.0	*15.7
24.2	21.2	11.8	17.4
25.5	21.3	17.1	16.8

*Knot.

These tests were made every 450 meters. In these particular tests, cones *A* and *B* are the best; but further tests on other occasions indicate that yarn made by the manufacturers of cones *A* and *B* show just as much variation as was found in cones *C* and *D*. The figures are given simply to show that great variation does take place and can only be detected by extensive testing of the rayon skein or cone.

These differences in elongation are caused primarily in the spinning process, but are modified in the subsequent processes. Thus the variation can be made in spooling, coning, and twisting. The possibilities of causing variation in the coning operation by faulty oversight of the tensions in that operation can be best illustrated by an experience which came to the writer's notice.

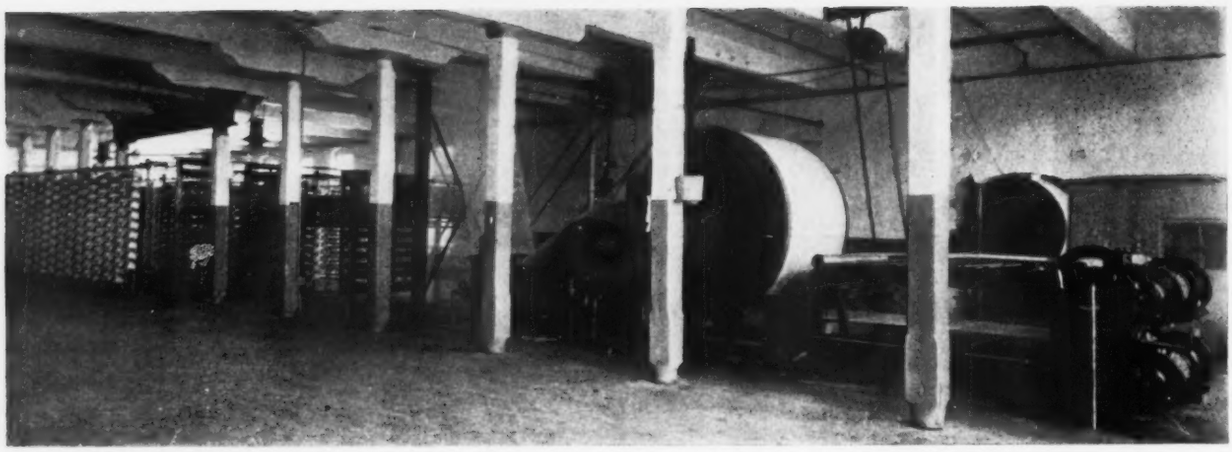
Twelve cones, each 2 lb. in weight, were employed as filling in a plain-weave fabric with cotton warp. The woven goods were dyed and finished in the usual way. The samples were woven in one continuous length, and thus received identical treatment. After dyeing and finishing, the fabric was examined. In the portion occupied by the yarn from one cone were found a great many shiners, while the rest of the length was almost free from this fault. In order to determine the cause of this fault, samples were taken from both sections. Tests of these samples gave the following results:

	Good	Bad
1. Dry Strength	214	230
2. Dry Elongation	21.4	18.8
3. Length of yarn in cloth	90 cm.	90 cm.
4. Length of yarn when taken out of cloth	93.95 cm.	93.0 cm.
5. Length of yarn wet out and dried	93.5 cm.	92.8 cm.

From these figures it is seen that the yarn taken from the portion showing shiners when released from the cloth did not elongate as much as the part which was free from these faults. Also it has a much lower elongation when tested for strength, pointing to the fact that the yarn had been subjected to some undue strain prior to weaving.

A 2-lb. cone ordinarily consists of eight spinning spools; and it would be almost impossible by chance to get on one cone eight spinning spools having this one fault. Therefore one must assume that in some way this cone, on account of negligence, received exceptionally severe treatment. Attempts were made to produce shiners by putting excess tension on the washboard brake bar of the coning machine, but without success. Therefore we were forced to the conclusion that the particular spindle on which this cone was wound was defective in some way which at present is unknown to us. However, many fabrics containing shiners have been examined, both before and since that experience, and all have shown the effects of abnormal tension.

[In a further article Mr. Sunderland will discuss methods of testing synthetic yarns to determine variations in twist and pliability.]



EXPERIENCE STILL BEST GUIDE TO

Warp-Sizing Practice

By Ghent R. Robertshaw

IMPORTANT factors in the slashing of cotton warps are the proportion of the ingredients to be used and the method of mixing them. Perhaps no operation in cotton manufacturing admits of such a variety of opinions or is practiced in so many ways as is warp sizing. Almost every mill has a different mixing, and the same mill will frequently have several mixings in use for various purposes. The reason for this is that the managers of each mill have found by experience what they consider the size mixing best suited to the class of goods they are manufacturing and to the climatic and atmospheric conditions under which they are operating. The result is that there are hundreds of size mixings in use, and it consequently is rendered difficult, if not impossible, to give standard mixings that will be recognized as satisfactory by the majority of mill men.

While it is not possible to prescribe a sizing formula which will give satisfactory results on all warps or which will apply to all fabrics, the following general principles govern practically all cases: Medium yarns, say from number 20s to 40s, for fabrics of light sley and pick call for the smallest percentage of size; medium yarns, for fabrics of heavy sley and pick, require a stronger mixing; fine yarns need a still heavier size; coarse yarns of low twist require a stronger mixing than do those of high twist. The accompanying table gives the approximate weights of corn starch and softener to each 100 gal. of water for the pure sizing of various numbers of combed yarns from 10s to 100s.

It should be understood that climate, atmospheric conditions, the location of the mill, location of the weave room—wheher on the ground floor or on an upper floor of a mill, type of starch used, character of the goods being made, and even the class of help employed as weavers will necessitate modifications of any size mixing. The best advice that can be given is to select from the table the size mixing which most nearly approaches the conditions of the special case to be considered, slash a few beams, and determine whether or not they weave satisfactorily. After this mill test, it may be necessary either to strengthen or weaken the size, or to change the proportions of starch and softener until the best mixing is obtained for the purpose. It should be remembered that it is better to err on the side of making the mixing too strong, rather than to obtain warps which are so soft that they will not weave properly.

The larger the proportion of starch to water the stiffer will be the yarn, while the larger the proportion of softener materials to starch and water, the more pliable and free from harshness will be the warp.

Economy in the use of sizing materials is largely a matter of boiling. A comparatively weak size mixing, if it is well boiled, can be made to do the work of a stronger mixing. Furthermore, better results are obtained in the weave room from a well-boiled size than from one that is badly cooked.

Admission of size requires care in order to keep the same quantity in the box at all times. As the size ordinarily is heated in the box by means of live steam, condensation of the steam tends to reduce the consistency of the solution. Therefore if long intervals elapse between additions of fresh size, the mixture is liable to become too thin. Later, when fresh size is admitted, the solution becomes too thick, causing a variation in the percentage placed on the yarn. For this reason fresh size should be added in small quantities and at frequent intervals. It is important also to regulate carefully the amount of steam admitted to heat the size. The immersion roll must be kept low enough to give a good supply of size to the warp. The lower the roll is placed, the longer the yarn remains in the size, and consequently, the greater the amount it absorbs.

TABLE I. Size mixings for various numbers of yarn

Numbers of Yarn	Light Sley and Pick		Medium Sley and Pick		Heavy Sley and Pick	
	Starch, Pounds	Softener, Pounds	Starch, Pounds	Softener, Pounds	Starch, Pounds	Softener, Pounds
10s to 25s	40	5	45	6	50	6
25s to 30s	30	4	35	5	40	5
30s to 40s	35	4	40	5	50	6
40s to 60s	45	5	50	5	65	7
60s to 80s	50	6	65	7	80	10
80s to 100s	65	7	80	10	90	12

Coatings and Suitings

By Geo. R. Stevens

SUGGESTIONS FOR ATTRACTIVE DESIGNS

A WEAVE which gives a fancy pattern suitable for women's coatings when made in bright coloring is shown at Fig. 1. It should be woven in fairly heavy yarns—say, 1¼-run warp and filling—spun from a rough cheviot quality of wool. Being mainly a plain weave, it will make a good-handling fabric with low pickage, 14 to 15 picks per inch, thus insuring a large production throughout the mill. The woven effect is depicted at Fig. 2.

The dressing pattern is one dark, one light; and the filling is the same. The general effect would be improved if a fairly high percentage of fancy colored wool nubs, combined with white nubs, were introduced into the blend. The nubs would lift the fabric into a high-grade novelty cloth. The selection of coloring can well be left to the taste and sales judgment of the individual manufacturer. Although the writer believes that a rough cheviot wool is most appropriate for such a design, the grade or quality of wool is also open to variation by the manufacturer. If cheviot quality is used, the fabric should be laid fairly narrow in the loom, as a better handle and appearance are obtained when the cloth is not pulled too much. A cramp sufficient to hold the fabric to about loom length after washing is desirable.

The weave for a new novelty effect in a zigzag herringbone pattern suitable for women's cheviot and tweed suitings, as well as for men's sport suitings, is illustrated at Fig. 3, with the woven effect at Fig. 4. It can be produced in yarns similar to those for Figs. 1 and 2, but in colorings selected for the use intended. The layout for ends and picks, the width in the reed, and the picks per inch can all be the same as before. Although the weave is shown drawn in on sixteen harnesses, eight harnesses can be used, and the draft can be enlarged or reduced in multiples of eight.

A very attractive worsted suiting of English manufacture is shown at Fig. 5. The weave is at Fig. 6. Experienced weavers will no doubt prefer to have the ends drawn in on eight harnesses, and the writer agrees that this would be desirable; but to save space he has made the draft on four harnesses. Any overseer of weaving can readily change the draft to eight harnesses to afford better weaving and avoid overcrowding of the heddles. The worsted in both warp and filling is 2/36s.

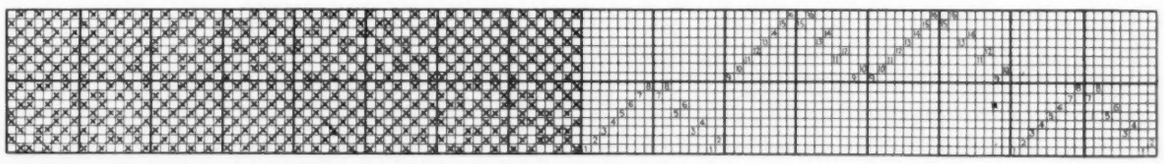


Fig. 1. Coating Weave

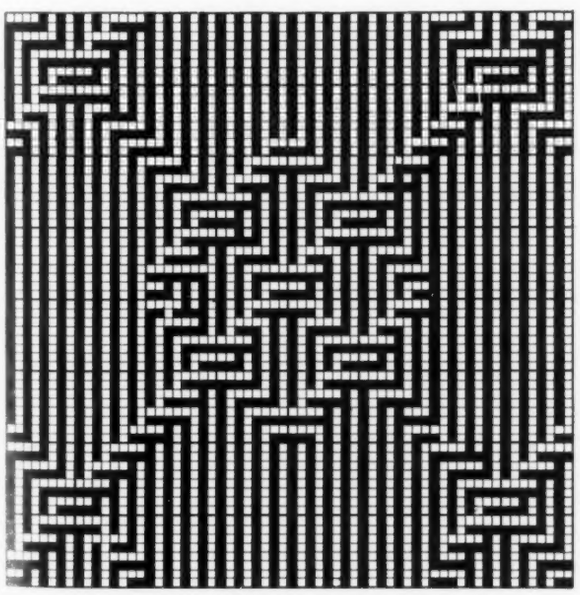


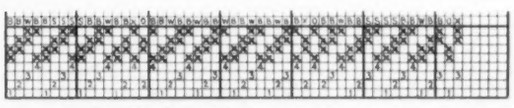
Fig. 2. Effect produced by Fig. 1

No. of Ends	Type of Yarn
2	Black worsted
1	White worsted
2	Black worsted
4	Black and white silk twist
2	Black worsted
1	White worsted
2	Black worsted
1	White silk, 3-ply
1	Orange worsted
2	Black worsted | x 5
1	White worsted /
2	Black worsted
1	White silk, 3-ply
1	Orange worsted
2	Black worsted

No. of Ends	Type of Yarn
1	White worsted
2	Black worsted
4	Black and white silk twist
2	Black worsted
1	White worsted
2	Black worsted
1	Orange worsted
1	White silk, 3-ply
51	

The filling is two picks of black worsted and one pick of white worsted.

Full dressing pattern for Fig. 6



B = Black worsted
W = White worsted
S = Black and white twist silk
X = White twist silk heavy
O = Orange worsted

Fig. 6. Weave for Fig. 5

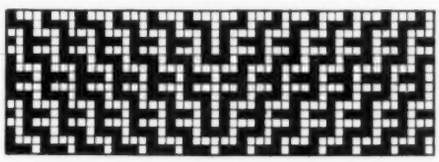


Fig. 4. Effect produced by Fig. 3

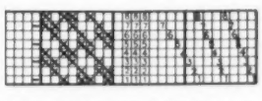


Fig. 3. Zigzag herringbone

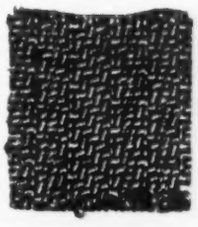


Fig. 5. Worsted suiting

D-13 on Twist...

DEFINITION CLARIFIED AND OTHER MATTERS ACCOMPLISHED

REVISION of definition for direction of twist and several technical papers disclosing progress in research featured the Providence (R.I.) meeting of Committee D-13 of American Society for Testing Materials, Oct. 19 and 20. Subcommittee meetings were held Thursday and the banquet was held at Providence-Biltmore Hotel that evening.

At the general session of D-13, Friday morning, Chairman H. J. Ball announced discontinuance of subcommittee A1-VII on osnaburg bags and the formation of A3-II on felt. He announced that Martin Castricum has been appointed chairman of A1-IV on tire fabrics and that the A.A.T.C.C. had appointed Hugh Christison, chemist of Arlington Mills, its representative on the subcommittee on wool to avoid duplication of work. Mr. Ball also stated that the March, 1934, meeting would be in Washington.

Among subcommittee reports R. H. Adams of section on tire yarns advised that yarns of 25s count and higher were needed for testing to complete the work in revising the Draper standards. He asked that mills donate such yarn with data as to processing and staple.

Martin Castricum offered change in tentative specification on Holland cloth, paragraph 6, specification D376, to the effect that when Holland was applied to sticky surface and withdrawn there should be no starch particles left. The change is to be submitted by letter ballot.

G. E. Hopkins of the wool committee reported that a glossary of terms in the wool industry was in preparation and would be circulated before submission, to get suggestions for revision.

A. L. Brassell of B-2 on nomenclature and definition, brought up revision of the twist definition. After a number had spoken on the subject, it was voted to phrase the definition along the following lines: When the yarn is held fixed on the left end in a horizontal position, if twist is taken out by twisting to the right or clockwise, it is regular or right hand twist; if twist is taken out by twisting to the left or counter-clockwise, it is reverse or left hand twist. Most speakers regretted the opposite practice of the thread and crepe yarn branches. On motion of Prof. G. B. Haven it was unanimously voted to strike out the footnote which stated that the thread industry practice was the reverse of the definition. The former paragraph defining twist by its slope (if to the right, right twist, etc.) was made an "i.e." clause following the new definition and it was voted that a diagram be added. Acceptance was submitted to letter ballot.

The first technical paper of the session was by Dr. H. W. Bookwater, U. S. Tire Co., Detroit, on "Strain Measurements of the Band Ply of an Inflated, Loaded Pneumatic Tire." He first reported on the history of scientific thought on fabric deterioration in tires, stating that Shipple, an early technologist, concluded that failure was due to compression stress rather than tensile stress, since tires fail on the inside plies rather than on the outside, and the analogy of bending a beam (compression on the inside of the bend, extension on the outside) supports this theory. Many succeeding technologists concluded that fatigue was due to repeated positive stresses and test machines for flexing under tension have been devised. Dr. Bookwalter's work had been to establish the condition of a tire's wall under inflation and deflection. His conclusion, after setting up many measured points inside the carcass and later taking a cast of these points under deflection, is that the flexing zone of the inside ply is characterized almost wholly by compressions and where these are maximum is the point of fabric (or cord) failure. Under these circumstances he offered that there was little in tire fabric testing under tension flexes.

Malcolm E. Campbell, U. S. Bureau of Agricultural Economics, spoke on "Improved Method for Converting Observed Skein Strength to That for Specified Count." There was great interest in Mr. Campbell's new formula which gives increased accuracy in results. His paper will be reported in a forthcoming issue of TEXTILE WORLD.

Alfred Suter, New York, spoke on new developments in testing apparatus. He stressed the more exacting standards for twist testing, and demonstrated on a new tester how tension of yarn under test had been given virtually automatic control. He displayed a universal yarn balance made by Roller-Smith. He also showed an improved thickness gauge.

James M. Scott, son of David Scott of Henry L. Scott Co., demonstrated a new twist tester for determining single, ply and cable twist as they lie in tire cord. Mr. Scott pointed out that previous method was by measuring helix angle under microscope and calculating therefrom, but that the new mechanical means was faster. This particular test is made by revolving both heads of the twist tester and so not disturbing the turns. A test of a certain 5-ply cord gave a reading of 9.65 turns on a regular twist tester; microscopic method figured out to 15.50 turns; while the new twist tester gave 18.58 turns.

The only prepared address after the dinner was by Brevard M. Jones of Jones, Gardner & Beal, Inc., Providence, cotton dealers and importers. He spoke in interesting detail of the rule of thumb methods used in growing, preparing, grading and marketing cotton with reference to points of superiority in handling some foreign cottons as against American practice.

Standards on Textile Materials

The 1933 edition of the publication "A.S.T.M. Standards on Textile Materials," prepared by Committee D-13, is now available. This is the first compilation of A.S.T.M. standards covering these materials since 1930. Many new standards have been issued since appearance of the earlier edition; consequently the present edition should be of much convenience to those dealing with textile materials.

New textile standards just issued this year cover Holland cloth, asbestos roofing, and tests for small amount of copper and manganese in textiles. Several of the specifications and test methods previously issued as tentative were adopted as standard this year. They include tolerances and tests for knit goods, specifications and tests for Cuban (jute) raw sugar bags and for asbestos tape for electrical purposes, and specifications for chafer tire fabrics and enameling duck for the tire industry. Revisions of specifications for a number of materials are also included.

In addition to standards, the book includes a psychrometric relative humidity table which combines accuracy and convenience; photomicrographs of common textile fabrics; and a proposed potassium dichromate oxidation method for determination of total iron in asbestos textiles.

The publication aggregates 164 pages. Copies are available at $1 each from A.S.T.M. headquarters, 1315 Spruce St., Philadelphia.

Rayon Weavers Assn.

HOLDS FIRST ANNUAL MEETING AND APPRAISES AN ACTIVE FOUR MONTHS

APPRAISAL of work accomplished toward conformity with NRA code requirements, and the outlining of plans for further adjustment to the new era, were the highlights of the first annual meeting of the National Rayon Weavers Association, which was held Oct. 31 at the Hotel New Yorker, New York. Especial significance attached to the meeting, as it gave the rayon weavers their initial opportunity to appraise in detachment the rapid-fire developments of recent months. The quick accomplishments of the weavers in forming their association, enacting their code, and effecting a smooth adjustment of the industry to the radical changes necessitated by the code—all in the short period of four months—supplied the keynote for most of the addresses at the meeting.

Percy S. Howe, president of the association, was absent due to illness, and J. Spencer Love, first vice-president, presided in his stead. Mr. Howe's address was read by C. Whitney Dall, secretary and treasurer. Mr. Howe reviewed developments since the association idea was first considered at a meeting in Washington, last May. The organization, he said, "has increased steadily until today it embraces 64 corporations operating 88 plants and representing over 40,000 looms engaged on rayon fabrics." The association, he continued, represents manufacturers consuming 80% of all rayon yarn shipped to the broad weaving trade by producers during the first six months of this year. Describing the association's fight against the proposed compensatory tax on rayon, he said the tax is unnecessary because rayon is not competing seriously with cotton; he asserted that the opposition would be continued at the tax hearing scheduled for Nov. 9.

Referring to "defensive measures made necessary by threats from outside influences," he touched on the recent agitation to have the cotton and rayon weavers' codes reopened, and he quoted Gen. Johnson as saying "the cotton code will be reopened only over my dead body."

Mr. Howe painted an encouraging picture of improvements effected by the adoption of the rayon weavers' code, stating that the total number of employees has been increased 40% "and the total payroll by a far greater percentage."

Following a condensed financial report by Mr. Dall, reports were submitted by committees on linings and dress goods. One of the chief problems of these committees was to establish the cost differentials incident to NRA operation; rapid progress is being made to that end, and the committee chairmen praised the industry for its cooperative spirit.

One of the features of the meeting was the announcement by Wm. Klopman, chairman of the dress goods committee, that the committee is working on a plan to offset over-buying by customers, which practice causes overproduction and thus injures both the mill and the merchant. The substance of the plan is to have all manufacturers report daily all orders received, which figures would be compiled by a central bureau of recognized integrity. It would thus be possible, Mr. Klopman explained, "for any member of this group at any time to get figures as to a customer's total liabilities and total orders he has placed for future delivery, as compared with his capital."

"You can see," he added, "that with these facts available, many orders would be turned down on the basis that the converter had already over-purchased and the consequent result would be that the mill would not be over-producing goods against orders which it would never deliver."

This project evoked much interest at the meeting, and was warmly commended by Edward Addis, president of Meinhard-Greeff Co., who was another speaker. Mr. Addis deplored the "reckless buying which is causing loss to both mills and merchants and is demoralizing the market," and said the plan outlined by Mr. Klopman deserved wholehearted support. He emphasized the point that the plan would give protection to the customer by helping toward market stability.

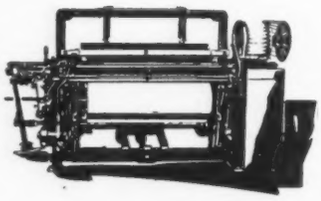
O. Max Gardner, former governor of North Carolina and legal adviser to the association, reviewed the difficulties incident to enactment of the weavers' code and said the work done by the association had made "a fine impression" on the Washington authorities. Analyzing the future of the NRA, Mr. Gardner said the final sixty days of this year would be a crucial period, and added that, "if we recede from the President's program we may look for drastic action in the new 1934 Congress."

George A. Sloan, president of the Cotton-Textile Institute, another scheduled speaker, was unable to attend due to illness. In a letter which was read at the meeting, Mr. Sloan stressed the point that wages in cotton mills vary according to type of fabric manufactured, and that rayon weavers in cotton mills therefore receive wages comparable to the highest in the industry. Strict observance of the differential provision in the code as regards wages, would prevent any depression of rayon wages due to the cotton minimum, he said.

At the conclusion of the meeting, the board of directors which has been enlarged to twenty-one members, was elected. Following the general session, the directors met and reelected the present officers as follows: Percy S. Howe, Jr., president, J. Spencer Love, first vice-president, Charles Walcott, second vice-president and C. W. Dall, secretary and treasurer. The executive committee, enlarged to seven members, was elected as follows: Percy S. Howe, Jr., J. Spencer Love, Charles Walcott, A. G. Myers, Seabury Stanton, R. E. Henry, and Lyman Frieze.

Mechanical Faults

ENCOUNTERED IN COTTON-LOOM TESTS



By Richard White

FOREMOST among the mechanical difficulties to be encountered in a loom test is banging-off. When one considers the number of possible causes of loom bangs, it is little wonder that this is a large item on the loom-stoppage report. Improperly set binders, worn pickers, bent or sticky picker rods, improperly set lug straps—these are some of the more frequent reasons why the loom comes to that abrupt, jarring stop, which means lost production and increased costs. It is the duty of the research man to call the attention of the fixer immediately to any loom which bangs off more than once during the test; and if the fixer is on to his job, it will not take him long to correct the trouble.

Miss-doffs (faulty change of bobbins) may be rather prominent in the list of mechanical difficulties; but at the same time, the cause of this trouble may be other than mechanical. An over-zealous battery hand may have filled the magazine so high that the nose of one of the bobbins might have slipped over into the adjacent slot while the butt remained in the original slot. This will invariably cause a miss-doff.

Another cause of miss-doffs is bent or missing rings on the bobbins. Any bobbins found with one or more rings missing or out of place should be immediately broken up so that they will not have a chance to cause any more trouble.

A shuttle which is not assuming its proper position in the box will also cause miss-doffs. Of course we have the goose-neck device which will prevent a doff if the shuttle is not far enough in the box, but this is not set particularly close, and there is enough room for variation beyond the goose-neck to cause faulty transfers.

Breaking on transfer may be the cause of considerable loom stoppage, and its exact cause may be rather difficult to determine. To begin with, of course, we must be assured that the filling has sufficient strength to withstand the unavoidable strain which is placed upon it when the transfer of bobbins takes place. Secondly, we must be sure that all shuttle springs are properly adjusted so that the bobbin will fit squarely in the shuttle. And thirdly, we must be sure that the bobbin is in the proper condition for transfer—that is, that the end is neither too tight nor too loose. If the end is too tight, it may prevent the bobbin from dropping properly into position for the transfer. If it is too loose, it may be caught and broken by the lay before the transfer takes place. A new gear take-up device has been developed to hold the filling ends, and this appears to keep the proper amount of tension on the yarn.

If a shuttle becomes plugged so that it will not thread, the result will be stoppage of the loom, if the loom is equipped with a feeler. If the loom is not so equipped, it will continue to doff until it has exhausted all the bobbins. Plugging of shuttles—or rather, shuttle eyes—results either from shelling off of the yarn or from a gradual accumulation of lint and yarn over a period of time.

When the loom is equipped with a thin-place preventer, we may have a number of stops to list under the heading of "Thin Places." Of course these defects occasionally occur through some mechanical fault of the take-up or let-off motion; but when we are running without feelers, failure of the filling fork to indicate for a bobbin change is more likely to be the reason. Quite often a piece of yarn will become lodged against the grid on the lay through which the filling fork passes; and this will allow the loom, even though there be no filling in the shuttle, to run until the thin-place preventer acts to knock off the shipper handle. Then again, the grid may become clogged with flyings and produce the same effect. If the fork itself has become bent due to being hit by the shuttle or to some other cause, it may strike against the grid instead of passing through it.

A loom that is cutting threads should be easily spotted. If the research man is on the job, when a loom is stopped for a warp break he will stretch the broken end and notice whether it comes into the shed, or into the harnesses, or behind. If the broken yarn measures up to the shed, the chances are very good that it has been cut, especially if the end has a chopped-off appearance in contrast to the tapered end resulting from soft yarn or a slug. The shuttles in this loom should be immediately examined and sand-papered or scraped where they are rough or chipped.

Very recently the author observed a case of negligence on this point. A loom stopped because of two threads being cut; and the weaver, reluctant to allow the pick clock a rest, hurriedly tied in the ends and started up the loom. Not more than a hundred picks later the chip which had cut the two original ends caught several more; and these, acting as a wedge, raised the chip, causing the shuttle to act more as a knife than a yarn carrier. The result was an entire cleaning out of about one-fourth of the upper half of the shed.

When the test has been completed, a full report with at least three carbon copies should be made; one for the agent, one for the superintendent, and one for the overseer of weaving. The latter may, and should, see that the fixer of the section has access to it. It is suggested that, in the preparation of the report, the warp, filling, and mechanical stops be arranged in three independent groups with the total stops per loom hour for each group clearly indicated; that totals both for each loom and for each type of stop be listed; and that other pertinent information, such as the location of the section, the hours of test, the type of filling wind, the size of the yarns, the degree of humidity, and the result of the previous test be included in the new report.

A glance at such a report will reveal whether the section is running up to standard or not, and a more careful study will show which type of stop is giving the most trouble and where the greatest possibility for improvement lies. Looms that are obviously giving more than their share of mechanical trouble should be singled out and consigned to the special attention of the fixer.

[In an article entitled "The Loom Test" on page 88 of our September issue, Mr. White discussed the causes and remedies for defective warps and fillings. Both articles are based primarily on 181 automatic box looms operating on heavy cotton work.]

PIECE SLIP

Reduces Remnants

IN FINISHING PLANT

By Howard P. Nash, Jr.

CLAIMS for shortage in excess of working allowance represent an important problem in a finishing plant. This is particularly true of a mill handling rayons where the values per yard are higher than those for cottons. Since any decrease in the yardage put into remnants will help to reduce shortages, keeping of remnants to a minimum is important.

The piece slip shown in the accompanying illustration will prove of assistance in solving this problem. Use of such a slip will make it possible to fix responsibility for defects and errors and will aid in stopping an only too common source of profit leakage.

As the goods are laid out in the gray room, each piece is marked with a piece number, beginning with No. 1 and running consecutively through as many numbers as there are pieces in the entire lot. These piece numbers and the gray yardage against each piece, together with the lot number and shade, are recorded on the slip.

While the goods are being put up, the folding room force makes an accounting of the disposition of all of the yardage against each piece number. If any part of the lot is put into remnants, the reason for making the remnant is shown. A separate column is used to show the amount cut back in shading, as these remnants are made after the goods have been put up.

A regular check of the piece slips will show what caused the remnants. Steps can then be taken to correct the condition which is responsible.

There are several other advantages which accrue from the use of piece slips. It will be noted, for example, that on each slip is marked the type of put up, length of pieces, and the finished width of the goods. Since the folder or machine operator is given full information on these points, he finds it unnecessary to leave his table or machine to obtain working directions. Again, when the finishing instructions call for a put up other than gray cuts, information as to the length of the gray piece

PIECE SLIP

Customer- X.Y.Co. Lot No. 200 Put up R.O.T. Piece length 50/60

Shade 513 Finished width 36 in.

Piece No.	Operator	Gray Yards	Finished Yards	Remnants	Cause	Cut back for off shade
1	H.N	75	70	5	bad end	
2		95	92½	1/2	seam	
3		100	90	7	dye spots	2
		270				

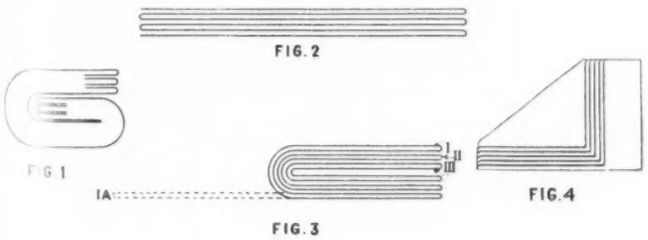
is an advantage to a machine operator who is putting up goods rolled on tubes or doubled and rolled. Assume for instance, that 50 to 60 yd. cuts are ordered, the operator has put up 60 yd. and knows from the piece slip that he has a 70-yd. piece; therefore he runs to the end, instead of cutting off and having a short piece. Or, if he finds he has a piece 120 yd. long, he cuts off at the halfway point and does not have to run the whole piece and later split it.

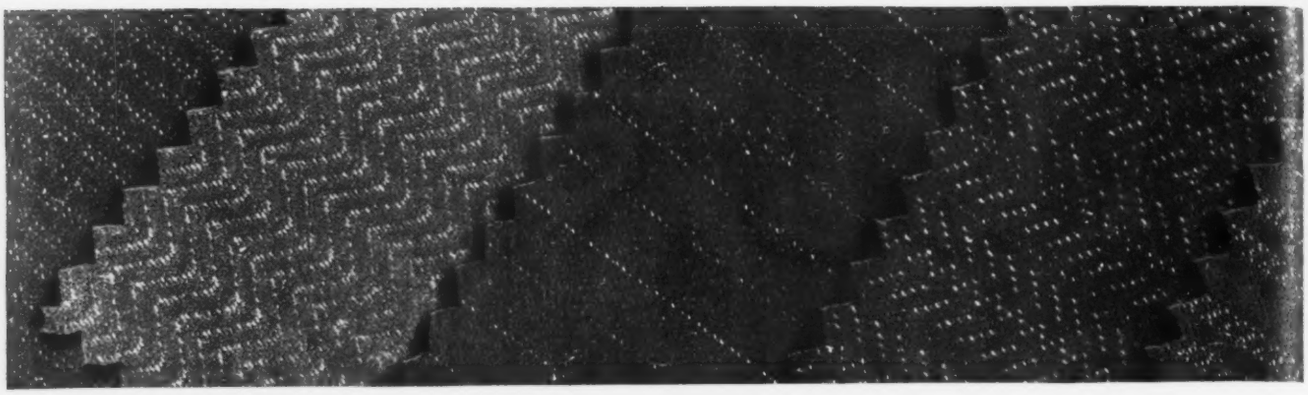
The piece slip shows also which particular operator ran each piece. It is possible, therefore, to place responsibility for marking the wrong yardage on a piece, faulty inspection, etc. Another advantage is that the shader can be instructed to file samples numbered to correspond with the pieces and to mark the slip so as to indicate whether each piece was shipped as of the correct shade or as a separate section. In the event that a claim is made for poor shading, the mill has an excellent check. If the accusation is not warranted, it can be refuted; and if justified, measures can be taken to prevent a recurrence of the faulty shading.

Finally should be mentioned that the piece slip is useful in closing lots, as it shows immediately whether or not all of the pieces in the lot have been put up.

Inspecting Fabrics FOR SHADING AND OTHER DEFECTS

THE following method of inspection for shade variations and other defects is particularly suitable for piece-dyed shirtings, dress goods, and similar fabrics which go to the cutting-up trade. The pieces, if folded as, for example, in Fig. 1 of the accompanying illustration, are laid out as shown in Fig. 2; then folded once as in Fig. 3. The inspector turns down lap I to position IA; looking for spots, stains, or other defects on all exposed surfaces. He repeats this with laps II, III, etc., until the piece is again in the position shown in Fig. 2. In order to inspect the other side of the fabric, he now turns the cut bottom-side up, folds once, and examines each lap as before. If the goods pass this inspection and do not have to be seconded or reprocessed, a corner of the piece is now turned over, as shown in Fig. 4; and the cut is examined for evenness of shade by a glimpse at the overlapping edges. Finally, several cuts, as seen in Fig. 2, are placed in a pile, and a glance along the side of the pieces enables the inspector to detect and remove for separate packing any cuts which vary in shade from the bulk of the lot.





PROCESSING MEN'S HIGH-GRADE NOVELTY SUITINGS TAXES

Finisher's Skill

By G. L. Atkinson

PROCESSING of men's double plain cloth and striped suitings calls for a high degree of skill and judgment on the part of the finisher. If these fabrics are not handled properly, listing, an undesirable papery handle, and other defects are bound to occur. In the following paragraphs is outlined a finishing routine which the writer has employed successfully to obtain the desired finish on fine suitings of this nature.

Since crabbing of these fabrics tends to give a thin, papery finish and to flatten the twill, the first operation—after the goods have been weighed and measured in the gray room—is scouring. The scouring procedure employed by writer is as follows:

Wet and run dry in the scouring machine	10 min.
Scour with soap and soda	35 min.
Rinse and dry	15 min.
Scour with soap and ammonia	40 min.
Rinse with warm water	55 min.
Rinse with cold water	10 min.

It will be noted that the time taken for scouring is rather long. However, this method is well worth the time spent, as it insures a soft handle and obviates the danger of uneven dyeing due to any residue of grease in the fabric.

After scouring and washing, the pieces are rolled evenly and tightly on wooden rollers—not more than two pieces being placed on one roll. They are then allowed to stand overnight to minimize the risk of crimping and curled selvages. If the goods have to stand over a week-end before dyeing, they should be dried in order to avoid any danger from mildew.

When the goods have been dyed and extracted, they are dried to a width at least 2 in. greater than the final finished width. This allows for shrinkage in damping, decatizing, and pressing. In the sewing of the pieces for drying, care should be taken that they are all sewn face up. Otherwise it will be necessary to sort the goods before brushing or shearing.

Better results are obtained if the pieces are run over a brushing machine before shearing. It is advantageous to employ a machine which is equipped with one or two emery rollers in addition to the brushes. In shearing, the writer first gives the pieces one run on the back on a hollow or rubber-bed machine. For the face of the fabric, he employs a solid-bed machine. The number of runs will, of course, depend on the particular finish required. As a rule, however, it is the practice to leave a little cover on the back, the face of the fabric being clean cut.

The goods are now sent to the perch and examined for faults. In the event that any stains are found, they should be removed by local cleaning if possible. If this cannot be done, the stained pieces must be returned to the preparing department to be rescoured, then—if necessary—to the dyehouse for stripping and redyeing. Every effort should be made, however, to avoid rehandling unless it is absolutely necessary.

After perching, the pieces are weighed and the amount of water required in the damping process calculated. A word of caution is necessary here. Too many firms, intent on making up the loss in weight with water in the damping process, put water into the goods without any consideration as to how much they will absorb. Fabrics of the type under consideration should not feel wet or damp when finally finished. Too much water in the pieces or uneven damping may cause glazing and the formation of shiny spots during pressing. Subsequent to damping with a fine spray, the pieces are allowed to stand overnight.

Decatizing and Steaming

Following the decatizing of this class of fabrics, many finishers immediately cool the goods and give them a pressing. This should not be attempted, as it results in a caky handle. Rather, the goods should be thoroughly steamed on the decatizing machine, run off hot, and given four or five runs on a suitable type of steaming machine.

Although many mills are using rotary presses for these fabrics, the writer favors the hydraulic press, despite its lower output. When the hydraulic press is used, it is necessary, of course, to give two pressings in order to treat all parts of the pieces. Finally, the goods are run over the steaming machine to remove the excess of glaze from the face.

A Composite Worsted Mill

DOFFING SYSTEMATICALLY AND CHECKING SPINNING QUALITY

By Alfred Heaton
Consulting Textile Engineer

ONE very efficient practice in worsted spinning is the doffing of all frames on a time schedule. Assume an overseer has charge of twenty frames, ten of which are spinning 40s and requiring 2 hr. between doffs. It is necessary only to get these frames doffing in rotation and then mark the time down on a nearby post or blackboard. If the first frame doffs at 8 a.m., it will doff again at 10 a.m., at which time the head doffer is instructed to start and doff right through the ten frames on 40s.

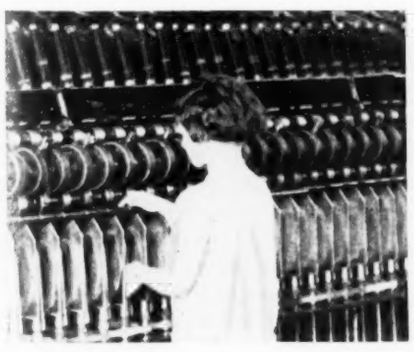
The overseer or head doffer stops all frames. When the first frame is stopped, the spinner immediately cleans the flyboards. When that frame is started, the head doffer immediately stops the next one so the spinner can brush the flyboards while the doffers are getting their ends up. Flyboards are brushed at doff and at doff only.

With this system it becomes apparent that, if the entire section were on 40s, there would never be two frames stopped for doff at the same time. As it seldom happens that an entire section is on the same count, let us assume the remaining ten frames are spinning 30s and requiring 1 hr. and 10 min. between doffs. With the ten frames on 30s doffing in rotation, there are bound to be times when both counts doff together. In such cases the spinners are called to doff until the doffers relieve them.

In marking down the doffing time in the morning, the overseer considers the relative doffing times of the different counts. Occasionally he somewhat offsets the counts doffing together by starting one count a few minutes early. It is seldom necessary to call the spinners to doff, and even on such occasions they are needed for very short periods of time. As these doffing times imprint themselves on the overseer's mind, he is left free to plan his other work between doffs.

Possibly this system may sound a bit complex, but actually it is not. The writer at one time, as a spinning overseer, had charge of 26 frames using this system with no assistant and only six doffers. To handle the same situation without this doffing system would have been, to put it mildly, a bit difficult.

The production gained by systematic doffing is amazing. At the end of the year it amounts to the equivalent of about two weeks' production, and sometimes more. Any spinning overseer knows that it is a common enough occurrence to have four and five frames stopped for doff at one time. If it takes 2 min. to doff the first frame, on the second frame 2 min. has been lost; on the third, 4 min.; on the fourth, 6 min.; and on the fifth, 8 min., a total loss of 20 min. The time required to doff in this way is equivalent to stopping one frame for a period of 30 min.; whereas on the basis of systematic doffing it would be 10 min.



Spinning Quality

A surprisingly small number of our worsted mills employ or even attempt any accurate method of determining just how well or just how poorly the different qualities or blends react in the spinning. There are, however, certain records which, if procured, will furnish a fairly reliable means for determining the quality or evenness of the yarn.

The number of ends which break of their own volition in the spinning, for example, has a definite bearing on the amount of waste which is made. Following through, it might seem that the amount of this waste compared with the amount or total weight of the top, would reveal the spinning qualities of any given lot. This, however, is only partially true, as various factors often tend to make such a comparison misleading. In short, this record is by no means sufficiently accurate to present a clear picture of conditions.

Changes in the blend to improve the spin are not at all rare, and many changes are also made in an effort to produce a cheaper yarn. Such changes are usually made after two or three thousand pounds of top have passed the gilling operations. When lots of this sort are finally spun and the resulting variable yarn, or cloth made from the yarn, reaches the dyehouse, the dyer is likely to experience considerable difficulty in maintaining an even shade.

The following is suggested as a simple and otherwise excellent method of remedying the above situation—as well as several other situations that will occur to the reader. Each lot should be tested regularly once every week. Whichever day is chosen, the same day should be used each week; and the test should preferably be conducted about the same time each day. Two spinning operators on each lot are instructed to make a chalk mark on a nearby post or blackboard each time an end breaks of its own accord on their respective sides, from one doff to another. A descriptive record of these lots, including the doffing time and the average number of broken ends, furnishes an accurate memorandum on the spinning qualities of the various blends. It enables the superintendent to know just what to expect and it eliminates any guess work, which might prove expensive. It is particularly valuable to a spinning plant which buys its top.

[Under the same heading in our September issue Mr. Heaton discussed double- versus single-end roving and the advantages of the ring rover. These articles are members of a series discussing the best methods employd by some twenty leading worsted spinning plants.]

Maintenance

OF CARDING AND SPINNING CONSIDERED BY EASTERN CAROLINAS DIVISION. S.T.A.

CARDING and spinning problems, with particular emphasis upon the overhauling of machinery, featured the discussion at the fall meeting of the Eastern Carolina Division of the Southern Textile Association, held at West Durham, N. C., Oct. 28. E. M. Holt, assistant manager, Erwin Cotton Mills Co., West Durham, chairman of the division, presided over the meeting. K. P. Lewis and P. B. Parks, Sr., Erwin Cotton Mills Co., made brief addresses of welcome.

The carding discussion was led by M. R. Vick, Rosemary Mfg. Co., Roanoke Rapids, N. C. The first question was: On the 80-hour week schedule, with production of 16,000 lb. per machine, how often should lappers be overhauled, all calender and fluted rolls removed, and gears inspected? Culver Batson, division manager, Consolidated Textile Corp., Lynchburg, Va., stated that pickers require more careful inspection on the 80-hour schedule. He recommended the practice of having the machines left clean and with hoods raised during the lunch periods and at stopping times. This should be done, he stated, so that the overseer may inspect the pickers regularly, with special attention to blades on the Kirschner beaters. M. R. Harden, superintendent, Erwin Cotton Mills Co., Plant No. 4, declared that Kirschner beaters do not often receive the attention that is given to blade beaters in overhauling pickers. He felt that it is extremely important to keep Kirschner beaters sharp. The majority of those discussing the first question recommended overhauling pickers at least every six months.

W. T. Byrd, overseer of carding, Erwin Cotton Mills Co., Plant No. 1, listed several points which should be observed in overhauling single-process pickers. These included removal and cleaning of calender rolls and cages, the inspection and replacement of plates, the adjustment and cleaning of all grid bars, and the cleaning of miscellaneous bearings and the adjustment of all gears. He did not recommend removal of the bottom screen unless it is badly damaged and needs a new shaft. Grid bars were said to become bruised at times and require filing. Care should be exercised to see that the top and bottom combs are in good condition, all aprons tight, leather on frictions free from oil, and the knock-off gears in good condition. He suggested putting a little grease on the teeth of the calender gears when overhauling the machine. The practice of cleaning screens, around the beaters, and mote knives twice daily was recommended.

There was some discussion as to how sharp blade beaters should be kept. The fact was brought out that when a blade beater becomes dull, it is not in the same proportion all the way, thus causing a tendency for the cotton to be thrown toward the center and lumped on the screen. If the beater is so sharp that the breaking strength of yarn is injured by its action, it was suggested that, rather than have dull blades, the beater should be set at greater distance from the feed roll or the beater speed reduced.

The maintenance and repair of cards constituted the second question for discussion. Chairman Vick stated that, in overhauling cards, some attention should be given to the brass journals which fit into the bearings. If the journal is worn as little as 12/1000 in., it was explained, in starting up the card in the morning, the belt may pull up the cylinder and damage the flats. It was believed by several members that bearings should not require replacement until after 15 or 20 years of service, under normal conditions with proper lubrication, but individual mill conditions were said to determine largely the frequency with which such bearings must be replaced.

When the chains on the top flats become worn to such an extent that more than two flats must be removed, it was generally agreed, the chains should be replaced, while a few members believed that no more than one flat should be removed. The removal of more than two flats was said to be likely to damage the other flats.

In reply to a question as to whether anyone had used carborundum for grinding cards, Chairman Vick stated that he had tried this product, but that it did not appear to give any better point. His objection was that the foundation of the carborundum which he had used did not have sufficient strength to stand the tension.

Spinning Problems

The discussion of spinning problems was led by M. R. Harden, superintendent, Erwin Cotton Mills Co., Plant No. 4. There was a difference of opinion as to whether or not double-flange spinning rings should be turned over after they become worn on one side. J. V. McCombs, superintendent, Randolph Mills, Inc., Franklinville, N. C., was not in favor of turning rings, stating that after a ring has been in the holder for any length of time it becomes pitted on the bottom side and will not give good results after being turned over, even if cleaned and polished when making the change. Another member pointed out that, in overhauling spinning frames, the traveler should be left on the ring upon being removed, and the ring then burnished as well as possible without taking off the traveler. In one mill, running on coarse numbers, the spinning rings were turned over and no appreciable difference could be noticed in the efficiency of spinning as compared with a new ring. Approximately 50% additional service was said to be possible by the practice of turning rings.

In overhauling spinning frames, the cylinders were said to require careful examination and repair, as a cylinder that is out of balance will cause traveler wear and other troubles. Once a year appeared to be the unanimous preference with respect to the frequency of overhauling spinning frames. Chairman Harden felt that when spindles are worn at the top so that bobbins do not fit properly, there is little chance of repairing the worn part in a manner which gives good results. He recommended the use of a special attachment for putting on spinning bands so as to avoid wear and save power. It was felt that spindle whorls might be re-grooved at some saving in cost, and the blade repointed; but all work of this kind should be measured with calipers to be sure that proper sizes are obtained.

Half Hose and Twist

EFFECT OF TURNS PER INCH IN YARN

THE subject of twist or turns per inch in cotton knitting yarns for half hose has received considerable attention from individual spinners, mercerizers, and knitters; but these manufacturers still seem to differ as to the amount of twist which is most desirable. In an effort to shed further light on the effect of twist, a thesis on the subject has been developed by J. G. Lewis at the Textile School of North Carolina State College, Raleigh, in partial fulfillment of requirements for the Master of Science degree.

After the preparatory machines were set up to give the size of yarn required for the tests, no changes were made until the spinning-frame stage was reached. After one set of bobbins was filled, the twist gears on either the spinning frame or twister were changed, so that the next set of bobbins would be filled with yarns having a different twist. A number of doffs were run.

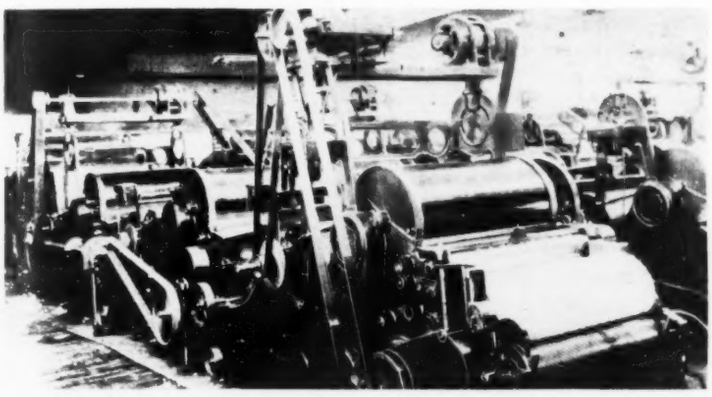
Ten 120-yd. skeins of each yarn were reeled off, conditioned, and tested for breaking strength in pounds. The yarns were then placed in the testing laboratory and allowed to condition for 24 hr. before being knitted into fabrics. They were not taken from the laboratory until they were needed for knitting, in order that a minimum change of moisture would be permitted. The yarns were knitted on a 48-gage half-hosiery knitting machine with 220 needles and with a cylinder speed of 160 r.p.m. After the hosiery fabrics were knitted, they were conditioned for 24 hr. and tested for breaking strength and for bursting pressure in pounds per square inch.

It was found that yarns containing an excessive number of turns per inch caused the fabric to curl and prevented the wales from lying straight. Yarns with subnormal twist were found to be too soft and fuzzy to give good wear. The most suitable of the twists employed were found to be the following: 15 to 17 turns per inch in both knitting and twisting for 36s and 36/2 yarns; 20 to 21 turns per inch in both spinning and twisting for 60s and 60/2 yarns, and 21 to 22 turns per inch in both spinning and twisting for 70s and 70/2 yarns. These twists provided the desired feel and wearing qualities and permitted the work to run well. It is believed that abrasion or actual wearing tests, if they had been conducted, would have supported the results found by the tensile-strength and bursting tests.

Picker-Lap Variation

REDUCED BY AUTOMATIC SPEED CONTROL

By Francis A. Westbrook
Consulting Engineer



Delivery end of one-process picker at Langdale Mill driven through variable-speed transmission. (Courtesy of Reeves.)

THE automatic control of the feed of a cotton picker through a cone-pulley motion has long been the accepted method for obtaining uniformity of lap. The Langdale Mill of the West Point Mfg. Co., Langdale, Ala., however, is automatically controlling the delivery end of a one-process picker through a variable-speed transmission. In doing so, it has reduced its lap variations from 9.10% to 6.06%, based on differences in weight between the heaviest and lightest yards.

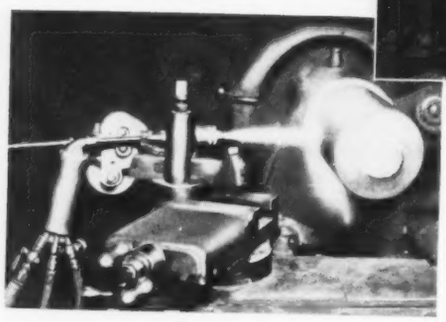
As shown in the accompanying photograph, a belt from the beater shaft of the finisher section drives one of the expanding and contracting-pulley shafts of the variable-speed transmission, which is located on top of the A-frame. A belt from the other shaft of the transmission drives the calender section. A lever which controls the expansion and contraction of the pulleys is connected to the usual evener motion.

In addition to this automatic control from the evener motion, an adjusting screw is provided on the lever in order that it may be changed manually when certain variables, such as weather or cotton, cause the laps to run light or heavy. After the setting has once been established, the automatic control takes care of other variations.

Tests were conducted on a standard lap weighing 14.50 oz. per yard. Before the automatic variable-speed control was installed, the average weight was 15.20 oz.; and after the installation the average was 14.44 oz. In other words, the average variation was reduced from .70 oz. to .06 oz. per yard.

Metal Spraying

NEW EQUIPMENT OPENS MANY APPLICATIONS



Above—Metallizing size kettle with tin and copper
Greenville Steel & Foundry Co.

At left—Applying stainless steel to valve plugs with Metalspray gun
New England Metal Coating Co.

• Growth of metal spraying should closely parallel that of welding; i.e., large textile mills may purchase their own equipment, but most of the work will be done by outside concerns specializing in the process. While there are interesting possibilities in spraying fabrics with metal, the more prosaic mechanical uses dominate at this time.

IT IS only recently that the spraying of molten metal by means of a stream of compressed air has assumed a position of importance in the industrial field. The present interest in this development lies not in the fact that it is new, but in that it is newly available, since the first crude equipment was developed in Germany about 20 years ago. The original patents covering a suitable gun for spraying metal were closely held in this country, the equipment was expensive, and its use consequently restricted. When these patents ran out recently, however, several concerns entered the field, improved guns were brought out, and the price lowered.

Everyone is familiar with guns for spraying paint. Equally familiar is the oxy-acetylene torch. Guns for spraying metal combine features of both. In principle, a wire of the desired metal is fed through the gun by means of knurled wheels. Usual practice is to have these knurled wheels driven by a small air turbine, with suitable gears, utilizing the compressed air so that the unit is self-contained. As the wire is fed through the gun it passes through a circle of oxy-acetylene flames. Just beyond the point where the wire becomes molten, the metal is picked up and atomized by a compressed air stream and sprayed in the direction determined by the nozzle. Electricity may also be used.

The atomized metal is shot out from the gun at a rate of from 10,000 to 30,000 ft. per second. When an object is held in the path of the spray the metal is impacted against the surface. The union of the metal particles on the surface is purely physical; consequently any smooth surface must be sand-blasted to remove dirt and to prepare a suitably roughened base to which the particles can cling. The spray itself is quite cool and will not burn the hand at a distance of several feet.

Any metal with a melting point below 3000° F., which can be secured in wire form, can be handled. Among such metals might be mentioned lead, zinc, copper, tin, aluminum, brass, bronze, stainless steel, monel metal, cold-rolled steel, and cadmium. The higher the melting point of the metal, the slower it must be fed through the gun and, consequently, the less the area that can be covered in a given time.

Here, then, is a "put on" tool. Uses are divided into two general classifications: (1) covering large areas with a thin coating as a protection against corrosion, and (2) building up metal parts that have become worn.

Containers of iron or steel are corroded by many of the chemicals encountered in the textile industry and the most obvious use of metal spraying is to coat the inside of such containers with a suitable corrosion-resisting metal. The coat can be as thin as 0.002 in. with a soft metal such as zinc (ranging up to a minimum of about 0.030 in. in the case of very hard metals, which require a thicker coat to overcome porosity) or it can be as thick as desired.

Some of the applications of metal spraying are lining size kettles with copper or with stainless steel; lining steel tanks used in water softening equipment with lead to resist the action of alum; coating with tin the inside of hot-water tanks that have become badly rusted; lining dye kettles, soapers and starch mixers with suitable metals; coating the surface of dry cans with tin; lining pumps used with chemicals; and coating fans that are used to exhaust chemical fumes. As metals with high melting points must be applied more slowly and require a thicker coating, where the use of such metals is indicated, a base of some softer metal is often applied first. Thus the first coating may be of zinc and the second of bronze. Interesting experiments are being carried out in lining agers with aluminum and other metals.

An interesting textile application of the building-up process is in treating worn calender rolls with stainless steel. The metal is sprayed on to build up the worn parts and then is machined smooth to the desired diameter (the sprayed surface is rough and must be smoothed in such cases). The process can be used also to build up worn shafting, etc., particularly as the low temperature of the spray minimizes distortion. The usual method of coating anything in the nature of a roll is to place the gun in the tool rest of a lathe, place the roll in the lathe, and then run in the usual manner.

The fact that the metal spray gun is an interesting tool has led some to use it as though it were a sort of adult toy and to try the impractical. Sprayed metal has little structural strength and acts much like a casting. The union of the sprayed particles is purely physical and the coating will not stand heavy impact blows. The limitations of the process should be kept in mind.

The fact that the spray is relatively cool has led to some use as a means of decorating textile fabrics. For example, silk stencil prints have been produced, and the effects have been striking. Soft metals, such as aluminum or tin, are used in this connection as it is possible to calender them to a shiny surface. It is probable that a number of novelties will be produced by the process in the future.

CAREFUL MANIPULATION OF GOODS ESSENTIAL IN

Finishing Glove Silk

By T. P. Sheridan

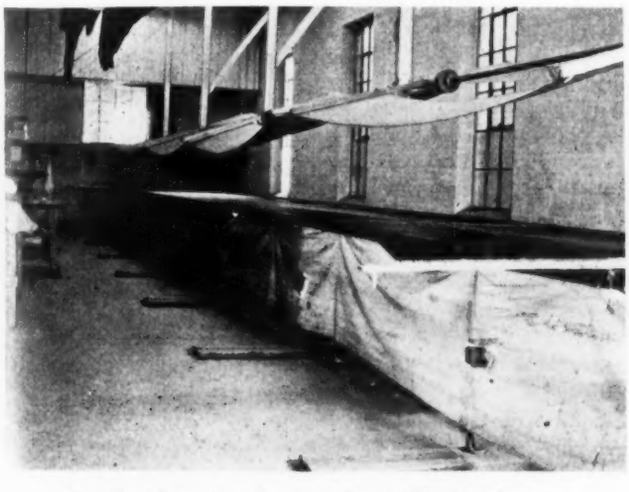
FINISHING of glove silk is a comparatively simple operation, yet great care is necessary in carrying out the process. An outline of the various procedures most commonly employed in handling this type of fabric will make clear the precautions which must be taken if work of the highest quality is to be obtained.

When the goods come from the dyebath, they are thoroughly extracted (about 5 min. after the extractor has reached full speed), and are then ready for finishing. In a small plant, it is necessary to take precautions against processing more than five pieces at a time, since goods that are allowed to lie in the truck for an hour or so in the "damp" are likely to become dry in spots and cause trouble when the finishing compound is applied.

The process vat should be just large enough to immerse that amount of material. It is also well to have it monel-metal lined so that it can be readily cleaned after treating a dark shade. This vat is filled to about 2 in. from the top with soft water, and the finishing solution stirred in. The five pieces are entered and worked in this bath by hand for about 5 min. They are next taken from the liquor and placed on a rack in such a way as to permit the excess liquor to drain back into the vat. Draining can be hastened by squeezing the pieces against the rack with the hands. When the goods are well drained, they are extracted lightly (say 2 min. after the extractor has reached maximum speed). Next the pieces are separated, the "tacking" at the edges is broken carefully, and the pieces are framed.

Modifications Possible

Each dyehouse is operated under conditions peculiar to itself, and the most economic method in one may be inefficient in the other. Therefore there are numerous modifications of the procedure outlined above. For example, some dryers take the whole batch—or a couple of batches of the same shade—and give a pass through the finishing liquor, then extract; others take each piece separately, process it, and then squeeze the excess liquor from the cloth by passing through a wringer. Both of these methods yield good results. In the first, care must be taken that the pieces do not become partially dried before the operators are ready to put them on the dressing frame; in the second, precautions must be taken to avoid uneven distribution of the finish when using a wringer to remove the excess liquor.



On the dressing frame glove-silk fabrics are stretched to standard yardage

Finishing Procedure

The particular finishing material employed varies according to conditions. There are available, a number of proprietary compounds which have been developed for use on glove silk, and many of these give excellent results. A simple formula which the writer has employed for a 5-piece lot consists of ¼ lb. of gelatin and 3 oz. of 56% acetic acid. With this recipe, in processing subsequent batches it is not compulsory to make up a fresh bath unless there is a change in color of the batch or the liquor has become discolored from bleeding of the previously processed pieces. For each additional five pieces, there are added about ¾ oz. of gelatin and 1 oz. of acetic acid.

Drying of the finished pieces may be carried out on a flat dressing frame or on a power tenter. As a rule, the flat frame gives the best results from a quality standpoint. On the other hand, the power tenter is more economical, giving a greater production and requiring less floor space.

Boarding Is Advisable

After the pieces have been dried, they are removed from the frame and folded on individual boards. The cloth is folded in the center, bringing edge to edge, with the face side in, and boarded. In many plants this operation is done by hand. A large highly polished table is provided, usually about 5 ft. wide by 10 or 12 ft. long. Yards, feet, and inches are marked off on one side of the surface so that the workmen may easily calculate the yardage.

If the goods are to be cut up immediately, boarding is unnecessary; but if some of the pieces are going to lie around on the shelves a couple of weeks or so and are just folded in a pile, they will be creased and shop-worn when the time arrives for them to be cut up. A skilled man can board a piece in very little time; and the writer believes that it is advisable to have all the pieces sent to the cutting room on boards.

Fire!..& NRA

SHORTER HOURS REQUIRE BETTER PROTECTION

IT IS very important that fire-protection and fire-prevention systems function at all times at 100% efficiency. With the adoption of the NRA codes have come many changes in hours of operation and in the numbers of employees; and it is well for the mill manager to stop for a moment and ask himself if, in view of these changes, he should give special attention to any matters that concern these systems.

The opinion is held by many fire inspectors that the critical period in the 24-hour cycle of a mill, from a fire point of view, is the hour just after the employees leave the mill—that is, the hour after the machinery stops. Fires commencing at that time sometimes result from current being left on motors. The motor overheats; soon a fire is in progress. Current on flatirons or other heating devices is also frequently left on; and if the unit is not properly insulated from the table, fire will result. An overheated bearing which, by reason of the shaft and pulleys being in motion, has not had its temperature rise to the danger point may, after the power stops, increase its heat sufficiently to set fire to any adjacent grease or oil. And there are other hazards that may develop within the first hour after shutdown.

With the two-shift schedule that hour now comes between 10 p. m. and midnight, according to the hours that the mill operates; and the watchmen should make a most thorough inspection of all the rooms on the first round after shutdown. All fire doors should be closed. All electrically heated devices should be inspected to see if the current is off. Each device-circuit should have a colored tell-tale lamp in series with the heating unit, so that if the current is on the unit the lamp is lighted. This serves as a warning both to the operator and to the watchman and facilitates inspection. Motors that have been left running should, of course, be shut down. Any suspicious odor of hot oil or of smoke should be traced to its source.

Many plants that formerly operated on a 24-hr. schedule are now limited to a total of 16 hr., which means that in such mills there is a daily—or, more properly speaking, a nightly—idle period of 8 hr. Thus there is an additional time when there are no employees in the plant except the watchmen. Opportunities for a fire to gain headway are considerably more numerous when there are no operatives about, and thus the general fire hazard is increased. For the same reason the possibilities for water damage from leaking or accidentally opened sprinkler heads are greater, and therefore increased responsibilities are placed on the watchmen's organization.

Where the watching department has been changed to an 8-hr. basis in place of the former 12, it means the taking-on of half as many more men as before. These men must be chosen with care; and in the shortest time possible they should be made familiar with the plant, with the work that is required of them, and particularly with the location of all fire-fighting equipment. They should also know the location of every valve controlling the water supply to the numerous sprinkler lines so that no time will be lost should occasion demand the closing of any particular valve.

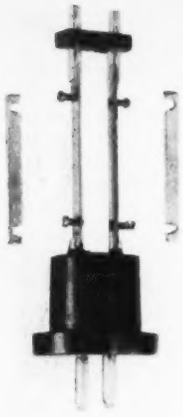
With the addition of many new employees, care should be taken that "good housekeeping" does not suffer. When two shifts are employed in place of one, there is a tendency for one shift to pass on to the other the work of cleaning up and removing or caring for various floor and machine wastes. These wastes, if not removed, constitute a fertile field for starting of fires.

Cleaning-up of rubbish and machine wastes in the rooms and placing these materials in the proper receptacles is but half the story. These containers should be regularly emptied or removed, particularly over the week-end. They should not be permitted to remain in the rooms or on outside platforms. Every mill has a record of fires starting in boxes, baskets, and barrels of rubbish. Such fires may be caused by rats, matches, lighted cigarettes, or spontaneous combustion. Usually these collections of waste are removed on Saturdays; but now, with the working time limited to five days a week, it is feared that many will lie over the week-end until Monday morning.

The textile codes forbid the employment of an operative more than 40 hr. in one week. This rule may at times prevent the doing of work that is really necessary in keeping the machines clean and in removing the wastes. Cleaners, to be sure, are exempt from the code ruling; but in the majority of instances this work is done, not by cleaners, but by the regular operatives. If cleaning work is omitted or only partly done, the results may not be apparent at the end of the first week or of the second week, but they will be slowly accumulative until finally they may become a dangerous fire hazard.

With an influx of new employees, particularly for the night shift, there is always an increase of outlawed smoking in remote corners and out-of-the-way places in the plant. There is but one satisfactory treatment for such smoking, and that is instant discharge. Such treatment, unlike other treatments, is likely to have a beneficial effect on individuals to whom it was not administered.

It is probable that mill managers will find that fire inspectors during the next few months will give special attention to finding and criticising any lapses in the heretofore excellent systems of fire protection and fire prevention to be found in the majority of mills.



INSULATION

SIMPLE TREATMENT IMPROVES ELECTRICAL RESISTANCE

By A. C. Clifford
Mechanical Engineer, Western Electric Co., Inc.

◆ *Two processes developed within recent years for increasing the electrical resistance of textiles for insulation purposes are the coating of cotton with cellulose acetate and the purification of both cotton and silk by means of a simple washing treatment. The following article summarizes the results obtained by the latter method and describes a simple type of apparatus for determining the insulation resistance of textile materials.*

SILK and cotton insulating materials normally contain electrolytes which under conditions of high humidity render the textile less effective from an electrical standpoint. In cases where a breakdown of the textile insulation on a metallic conductor has occurred, the failure has been frequently traced to electrolytes in the textile. In silk insulating materials the electrolytes consist of the substances always present in raw silks which have not been completely removed by the boil-off operation; in addition, small quantities of reagents used in boiling-off are generally found in insulating silks. Cotton insulating materials have usually received no chemical treatment, and the harmful substances found in these products are normal to the fiber. Obviously from an electrical standpoint it is desirable to remove these harmful substances from the textiles. A process for accomplishing this has been used for some time by the Western Electric Co., and sufficient experience has been gained to report the successful preparation and large-scale commercial use of purified textiles for insulating purposes.

This purification process is not complicated, and its cost is reasonable. Essentially it consists of treating the textile material with a large amount of water, containing suitable reagents, under carefully regulated conditions of temperature and pressure. Special care is required in the drying operation to insure the maximum effect. Purified textiles are not readily contaminated and they can be handled and stored in the same manner as dyed textiles. Purification can be performed on dyed or undyed textiles equally well.

The effect of the purification process on textiles can be appreciated readily from the following test results:

	D. C. Insulation Resistance Kilomagohms per End at 85% Relative Humidity & 100° F.	
	Before Purification	*After Purification*
60/1 Cotton Yarn	1	200
62/1 Spun Silk Yarn	10	3500

It will be seen that purification increased the insulation resistance of 60/1 cotton yarn 200-fold and spun silk yarn having about the same diameter 350-fold. The effect of purification upon the electrical characteristics of textile insulated wire is shown graphically in Figs. 1 and 2; note therein relative effect of humidity change.

Quality control of purified textiles is maintained by subjecting representative samples from each processed lot to a test for insulation resistance. The sample of yarn is wound around an electrode (Fig. 3). The electrode is inserted in a conditioning cabinet where it is exposed for four hours at 85% relative humidity and 100° F. in order to attain equilibrium. Insulation resistance is then calculated from the galvanometer reading obtained when a known electrical current is passed through the sample.

Introduction of purified yarns into the telephone system has resulted in a substantial improvement in the quality of the apparatus; and in some cases where transmission requirements could not be met, difficulties of long standing have been eliminated. The improved materials have made possible substantial economies. Of special interest in this connection is the substitution of cotton for silk in the external and conductor braids of the familiar brown telephone cords. This change was possible because purified cotton is equivalent electrically to the unpurified silk formerly used.

The extension of the purification process to treated and untreated fabrics used for insulating purposes in the telephone industry is expected. In addition, there are obviously many applications outside of the telephone industry where the advantages and economies resulting from the use of purified textiles can readily be realized.

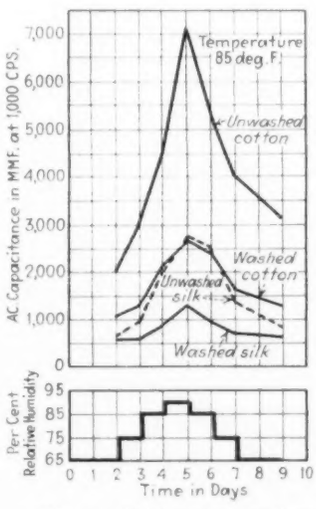


Fig. 1. (left) A.C. capacitance of 50 ft. of twisted pair wires insulated with double servings of equal thickness.

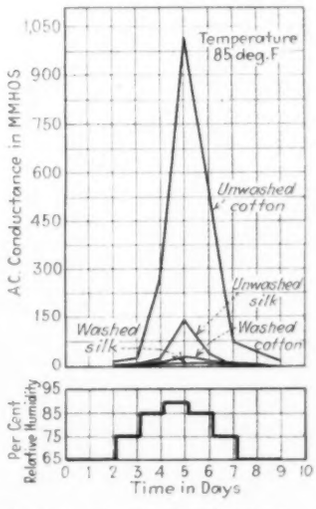


Fig. 2. (right) A.C. conductance of 50 ft. of twisted pair wire insulated with double servings of equal thickness.

Fig. 3. (at top of page) Electrode used for determining insulation resistance on textile yarns.

Costs and Prices

OF COTTON TEXTILES UNDER NRA

By Ralph E. Loper

Ralph E. Loper & Co., Fall River, Mass.

◆ *This is an abstract (not a verbatim report) of an address presented by Mr. Loper at the annual meeting of the Cotton-Textile Institute. A report of this meeting appears on the pages immediately following.*

SINCE the cotton textile industry was the first to adopt a code and therefore the first to face the necessity of passing substantially higher costs along to the consumer, it is natural that considerable attention should be drawn to textile prices. To understand the present situation, we must understand what has been transpiring in the industry since it passed its peak of expansion in 1923.

At the close of that year there were approximately 38,000,000 spindles in place but because of keen competition and unprofitable prices that number has been declining steadily. Since early in 1924, mills with about 7,500,000 spindles, representing a original investment of about $150,000,000, were dismantled. In 1929, when the Dow Jones industrial averages were 350% of their 1923 values, the average price for the stocks of southern cotton mills was only 62% of their 1923 values and New England textile shares showed much greater depreciation.

The cotton textile industry did not share broadly in the general prosperity of the middle twenties. The Department of Commerce has selected the year 1926 as the base period and uses the average wholesale price of cotton goods during that year as 100. In August, 1933, this index stood at 93.5 and special comment has been made because this is only 6.5% below 1926 prices. Based upon income tax returns from 1,060 cotton mills for 1926, a combination of their profits and losses leaves a net deficit of $32,463,000 after income tax. Therefore, although 1926 may represent normal prosperity for industry in general, it was an unfortunate year for the cotton textile industry.

Although emphasis has been placed upon relationship between price of cotton and price of cloth during the last ten years, with the suggestion that this period be considered as normal, a study indicates that the net deficit of all these cotton mills during this ten year period was more than $100,000,000 after income tax.

On July 9, the President approved Code No. 1 and it was put in effect July 17. The following provisions had a direct effect upon manufacturing costs: (1) the 40-hour work-week for operatives; (2) the same weekly pay for 40 hours as previously paid for the longer week; (3) a minimum wage of $12 in the South and $13 in the North.

Between March 15 and Sept. 1 there was a gain of 146,000 or 45% in the number employed in cotton mills. During the same period, payrolls increased by $14,200,000 or 111%. Naturally these three provisions of the code increased manufacturing costs of cotton mills in some sections more than others. Mills whose schedules had already benefited by law of 48 hours had their labor costs increased 20% before putting into effect the minimum wage provisions, while mills which were operating on a 55-hour schedule had labor costs increased 37½% before applying minimum wage.

After adding the increases caused by the latter provision, we get a total increase of over 100% in the labor costs of many mills; the average labor cost per unit of product for the industry as a whole increased 70%. In addition, the 40-hour week with an 80-hour limit on machinery increased the cost per unit of product for all fixed items of overhead. Also, the costs of fuel and supplies and machinery replacements have materially increased because other manufacturers are operating under codes.

The application, on Aug. 1, of a processing tax on cotton means an addition of 30% to today's cost of 1 1/16" staple cotton and 45% to the cost of short cotton. This tax is expected to yield $110,000,000 during the cotton year 1933-34, and yet it is spoken of as being unimportant to the ultimate consumer. Actually, it will collect from the consumers in one year more than the combined net profits of the cotton textile industry during the best year it has had since the World War; and more than twice the amount of money the industry is allowed to include for depreciation on Federal tax returns. The tax amounts to six times as much as the industry pays for all State, county and municipal taxes. Again, this sum would have paid all the operatives employed in the industry in March, 1933, for a period of nine months at the rate then prevailing.

To show the actual results of operation under the code and processing tax, a careful study has been made of the present cost of manufacturing in representative groups of southern and eastern mills. On Oct. 7 the cost of cotton was added to these manufacturing costs and the total was compared with the selling price of the various fabrics and yarns with the following results:

The group of fine combed fabrics included a broadcloth, a lawn and a pique. These three standard fabrics showed an average loss of .47c. per yd. before interest. To return 6% interest on investment at replacement cost requires on these fabrics 2.97c. per yd.

A similar calculation on Oct. 7 for a group of typical print cloths showed an average of 1.72c. per lb. earned toward interest, which is equivalent to only 2.38% interest on investment at replacement cost.

A typical group of narrow sheetings showed an average of .83c. per lb. earned toward interest—equivalent to 1.75% interest on investment at replacement cost.

A representative group of carded hosiery and warp yarns showed an average earning of 1.48c. per lb., or 3.2% interest on investment at replacement cost.

Combed yarns with mercerizing twist in ball warps showed an average earning of 2.67c. per lb., or 1.62% interest on investment at replacement cost.

These five groups taken together should give a fair cross-section of the industry. On the basis of prices on Oct. 7 they show an average yield of 1.6% on investment at replacement costs. It is fair to say that the cotton textile industry as a whole is now earning a lower rate of interest on its actual investment than the United States Government pays on its bonds.

Fundamentally Sound Position

The cotton textile industry is in a fundamentally sound position. Earnings are still extremely low but we are better off than we were a year ago, or two years ago. The 80-hour limit on machine operation has gone a long way toward removing the menace of over-production. The period of liquidation has reduced available productive equipment to about the level of 1910. In that year the work-week for operatives varied from 54 to 60 hours and upwards. Today under the code it is 40 hours, and during the interval since 1910 the population of the United States has increased more than 35%. With the increase in purchasing power expected under the NRA, the prospects of the industry should be bright indeed.

Our industry has made more real progress under the "New Deal" than it has made in several years previously. We should not expect miracles from the NRA but the only logical position for any of us is backing the program to the limit of our ability.

Textile prices are still going to remain dangerously close to manufacturing costs unless mill executives watch their increasing costs very carefully and insist upon a price which at least includes something towards interest on investment.

This is the best assurance to our employees that the improvement in wages and working condition resulting from the code will be sustained.

George A. Sloan
President

G. Edward Buxton
Vice-President

Donald Comer
Vice-President

Cotton-Textile Institute

DISSECTS NRA AT ANNUAL MEETING

THE annual meeting of the Cotton-Textile Institute held in New York Oct. 18 afforded members a unique opportunity to study at first hand the accomplished and potential effects of the NRA upon their industry. Not only was the entire program devoted to an analysis of the ramifications of the cotton textile code but Deputy Administrator A. D. Whiteside, in charge of textiles, was present at the luncheon to speak and to answer questions.

Throughout the meeting congratulations were showered upon the industry for its leadership in the recovery movement. General Hugh S. Johnson wired: "On the occasion of your annual meeting, may I congratulate you and the members of Code No. 1. You were leaders of industry in the movement toward recovery, and performance under your code is one of the bright spots of this Administration." Similar expressions were made by Mr. Whiteside, and by former Deputy Administrator W. L. Allen, who presided at the cotton code hearing.

Outside of the election of directors, the only formal action taken by the meeting was the unanimous passage of a resolution expressing appreciation of the principles of fair play and partnership followed by President Roosevelt and General Johnson; asserting confidence that the provisions of the act hold out promise for the restoration of stability and the elimination of unsound trade practices; and reaffirming the industry's belief in the vital importance of the limitation of machine operations. The resolution expresed the hope that the present and prospective benefits of the recovery movement would not be nullified by industrial strife due to misinterpretation of the act and of the code.

Among the leaders of the industry and representatives of the Administration who were introduced briefly by President George A. Sloan, who presided, were Thomas H. Marchant, president of the American Cotton Manufacturers Association; Robert Amory, who expressed regrets that Ernest N. Hood, president of the National Association of Cotton Manufacturers, was absent because of illness; Hagruder Dent, president of the Cotton Textile Merchants of New York; Assistant Deputy Administrators W. S. Nicholson and Herbert Morrow; and F. J. Cheatham, of the Department of Agriculture.

The formal addresses included a broad coverage of the present and prospective developments under the code, by Mr. Sloan; a report on the plans of the Plant Extension Committee of the Cotton Textile Industry Committe, by B. B. Gossett, chairman of that committee; an analysis of the export and import situation for cotton textiles under the code, by Harry L. Bailey, a member of the Cotton Textile Industry Committee; and a consideration of present-day relationships between cotton textile costs and prices, by Ralph E. Loper, industrial engineer of Fall River, Mass.

A. D. Whiteside's Remarks

The extemporaneous discussion which was developed at the luncheon through the question-and-answer method, with Mr. Whiteside at the "answer" end, was "off the record." However, in his prepared remarks, the deputy administrator gave a clear-cut expression of opinion on several matters of vital interest to textile manufacturers. He said, in part:

My own viewpoint is that we must strengthen associations and encourage in every way collective action in those activities which are subject to collectivism.

But we must in every code that is written and in every authority given to the administrative body of institutes or associations preserve those fundamental prerogatives which protect individualism by drawing a fine but an intelligent distinction between collectivism and individualism. By doing that we shall make the Recovery Act the greatest legislative act ever passed in any country.

If we fail and submerge individualism to the point that collectivism entirely dominates our business life, we shall have taken the first step toward destroying the highest economic system ever developed in the civilized world. On the other hand, individualism as it collides with the welfare of the majority, must be restrained.

Labor: I have an entirely different viewpoint regarding labor than I had when I went to Washington. I see that we have a tremendous social problem which is irrevocably tied in with industry and trade. I see more clearly than ever before the rights of labor or those who work for us.

I have met the National Labor leaders. I like them and I respect them to the last man or woman. I have a fair idea of what they must have and I think I see how they expect to reach their objective. As far as I can make out, no labor leader has expressed a higher objective for the individual worker than the humane employer shows his employees.

I have been shocked at conditions in several industries and in many concerns in most industries. I differ from labor in one important respect—that is,

In the old days we never agreed
STORY OF THE COTTON FAMILY
The Cottons are the most popular family on Textile Street—years ago they were just
Mr. Fact and Miss Fancy-Miss Fancy became friendly with Mr. Fact's sister, Necessity and
told me the story of her romance. "In the old days we never agreed, she said, but through
necessity we often met in the Cotton House. I thought Mr. Fact silly because he was always
fussing for comfort—he thought me impractical because I was always pining for beauty. Then
one day Necessity said to us, 'The thing you two need is each other'—we agreed. The new
lines of Cottons have the best of both our traits. They are beautiful and practical.

in what our primary purpose is for the immediate future. We must have a minimum wage, but that is relatively unimportant, provided it is decent. But the primary purpose must be re-employment, not the question whether the minimum wage is a dollar or two more or less. That should be labor's objective; that is the great social problem that confronts this country at the moment. It is very, very serious. In knowing that objective each industry should work toward it as the one single purpose at the moment.

Machinery Limitations: I think you have been concerned about my attitude regarding machinery limitations. May I say that my only viewpoint in that respect is that if you assume a definite position regarding machine hours you must assume the responsibility for its flexibility—that is, flexibility and regulation. If a double shift of 40 hour schedule is correct at one time, it does not necessarily mean that that must continue at all times. That is your most positive means of industrial control, for that brake directs supply in its relationship with demand, which, irrespective of any other factors involved, ultimately decides the issue between profit and loss.

Increased Prices: I have been asked by General Johnson to investigate the increase in prices under the codes. There are only 110 specific complaints—remarkably few.

Swinging from a loss of 5% to a profit of 5% in three production processes requires a mark-up of approximately 35% in the consumable product. Processing costs and the increased labor costs of the hour and wage schedules now existing amply account for the increased prices in general which are so widely misunderstood even by business men. Isolated cases of profiteering would be and are the natural outcome of this sudden drastic change in our business formula.

Wage Scales: I am definitely opposed to occupational scales of wages in the majority of codes, but I am just as definitely in favor of the enforcement of the provisions of codes as they apply to semi-skilled and skilled workers.

I am inclined to think that this divergence of viewpoint between labor and capital will be reconciled very shortly, but that issue faces this industry at this moment. This comes through no direct fault in the cotton textile code. You know the history of the controversy and you know that the situation is complicated and one which it is difficult to work out.

Cotton Textile Code: We are proud of the cotton textile code. It is the law of this industry and it cannot be legally set aside in any fundamental provision. I believe that I accurately reflect the viewpoint of the Administration. I know that I state specifically the opinion of General Johnson. You have led the way for industrial self-government of the highest order.

You are still the leaders and my thought is to ask you to retain that leadership by the broadest possible administration of your own affairs, in the interest of the majority in a situation which requires unselfishness and vision, which may not be entirely without its penalty. We at the NRA will do our part to protect Code No. 1 irrespective of the superficial evidence to the contrary which you may have.

No matter how carefully a manufacturer may have followed the developments of the cotton code since the inception of the NRA, its ramifications are so diverse that it is difficult to get a broad picture of the whole. George A. Sloan, president of the Institute, made this task an easier one, by gathering together the various parts and presenting an integrated view.

Starting with the origin of the recovery program last May, Mr. Sloan traced briefly the steps which were taken by the cotton textile industry and which enabled it to be the first in submitting a code. He then dwelt upon the

major problems presented by the code. His remarks are abstracted below:

The industry committee appointed to prepare the code had a two-fold task: to preserve the unanimity of objective within its own membership, and to withstand the pressure of outside interests who sought to impose a 30-hour week upon the industry. On the latter point, the committee constantly reminded the Administration that small isolated mills could not exist upon a schedule that required too large an addition to its working force.

Again it was essential to establish limitation of machine operation and to make the Administration realize that this was essential to the rehabilitation of the industry. That provision in the code, in the speaker's opinion, has been its most important achievement; it is an accomplishment that it can defend, and has defended and will defend.

In addition to the fundamental provisions of the code, the way has been opened for the industry as a whole and the various groups to take up the constructive work of self-government in working out the detail of competitive practices so as to stabilize the industry and to avoid those destructive methods which, if one follows, all must follow, and which break down the morale and prosperity of an industry.

Coming to the effect of the code during its three months of operation, stocks on hand in the middle of September amounted to approximately the same quantity as a year ago. Stocks just prior to the adoption of the code on July 17 had been materially reduced. This stock reduction is mentioned because it has been frequently stated that mills deliberately accumulated a large volume of stocks in order to be well supplied when the reduced working hours and higher minimum wages went into effect. Any such statement or inference is highly inaccurate and unfair. As a matter of fact, the industry's stock position reached the lowest point upon record by the middle of July.

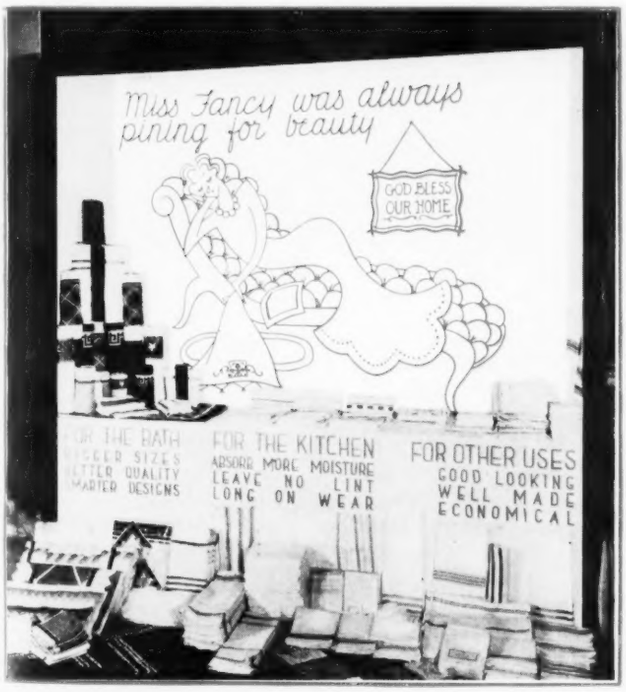
On wages, comparison of the reports now being compiled by the institute with the data published for 1932 by the Department of Labor, makes it reasonably certain that the wages received by those who had been receiving more than the minimum, and the differentials as well, have been adequately preserved. The average for seven occupational groups in 1932 that earned, according to Government reports, more than the minimum wage now prescribed in the code, was 34.9c per hr.; in August, 1933, the average for the same group was 43.9c. per hr., or an increase of 25% in the hourly rate. Furthermore, the August, 1933, rate for this group was about 40% in excess of the code minimum.

As to effect upon employment, the number of persons on mill payrolls during the last week of August had increased 40% compared with the first week of March and the weekly payroll had increased nearly 100%.

In conclusion, there is one outstanding fact in the history of the industry during the last four months The industry has shown a unity, an ability to reach decisions, and a wealth of able and unselfish leaders who commanded the confidence of all.

Plant Extension Restrictions Explained

A remarkably clear and logical explanation of the plan for limiting the addition of productive machinery was presented by B. B. Gossett, chairman of the Plant Extension Committee of the Cotton Textile Industry Committee. The gist of Mr. Gossett's argument was that this procedure is sound; that there is nothing in it constituting a barrier to progress or to increased efficiency; that opportunity is present for the introduction of improved equipment to replace less-efficient equipment; and that the functioning of this section of the code should be for



the greatest benefit of the industry and counteract what would otherwise be a very detrimental expansion.

The details of the plan were given in last month's issue of TEXTILE WORLD. Briefly, it provides for the registration of all looms and spindles in place in cotton mills and requires that before additional looms and spindles can be installed, except for replacement or balancing purposes, application must be made to the Administrator for a certificate authorizing such installation.

Highlights of Mr. Gossett's address follow:

There are more spindles and looms in the industry than can be profitably employed. Despite the pronounced increase in employment resulting from the code, 4,900,000 spindles did not run at any time during the month of August. Therefore it is obvious that there is no need for expanding the industry's equipment to compensate for the reduction in the work-week to 40 hours and the limitation of running time of productive machinery to 80 hours. In imposing the latter limitation, the NRA recognized that there is more equipment in existence than can be operated profitably; that the absence of any restriction would leave the industry in the same chaotic condition that existed prior to the code; and that any tendency of mills located in low cost areas, or mills that had hitherto run two or more shifts, to compensate for code restrictions by the purchase of additional machinery, should be effectively curbed.

In the speaker's opinion, the limitation of the hours of operation of productive machinery and the limitation on the addition of productive machinery, except for replacement and balancing purposes, afford the industry more hope for its stabilization and for improvement in general employment conditions than all other provisions of the code combined.

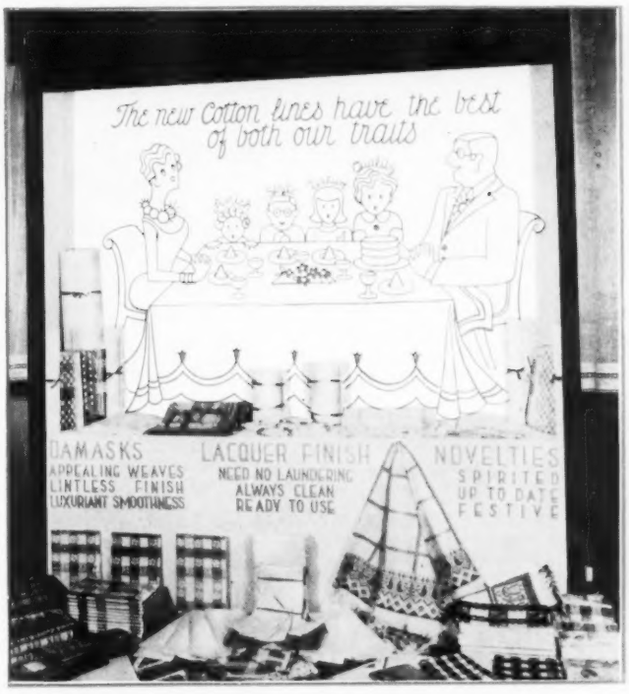
The provision need not cause uneasiness on the part of machinery builders, as the code places no hindrance upon installation of looms and spindles for replacement or for legitimate balancing purposes. In addition of course there is no restriction whatever on preparatory machinery and other important equipment. The committee responsible for the program is aware of the necessity for the capital goods industries to enjoy their full share in the industrial recovery. It should be remembered that decades of life and operation have taken their toll of efficiency of mill equipment. In addition, there is the all-important question of new inventions and improvements that are rendering obsolete processes and methods as well as machinery previously

What the Pictures Tell

Interesting cotton goods exhibits were displayed at the Cotton-Textile Institute meeting. They were suggestive of human interest in window displays. The series of four displays are illustrated on these pages. "Cottons Now Decorate the Home" was the theme of the exhibit. About 75 manufacturers and distributors cooperated in supplying materials.

The "Story of the Cotton Family" as given at the base of the first panel explains the drawings. It follows:

The Cottons are the most popular family on Textile Street—years ago they were just Mr. Fact and Miss Fancy—Miss Fancy became friendly with Mr. Fact's sister, Necessity, and the first thing we knew Fact and Fancy were married. Twenty-five years later Mrs. Fancy told me this story of her romance: "In the old days, we never agreed, but through Necessity we often met in the Cotton House. I thought Mr. Fact silly because he was always fussing for comfort—he thought me impractical because I was always pining for beauty. Then one day Necessity said to us, 'The thing you two need is each other',—we agreed. The new lines of Cottons have the best of both our traits. They are beautiful and practical."



considered efficient. Therefore, in the speaker's opinion, if the operation of the code proves to be successful and mills are enabled to make a profit, there will be far more business in sight for machinery builders in replacements than if the industry continued to pursue the unprofitable path it has followed for the last several years.

Export and Import Situation

Expressing his belief that the American public would accept the higher prices necessitated by the cotton textile code, Harry L. Bailey, a member of the Cotton Textile Industry Commitee, pointed out that, on the other hand, the code presents a critical situation from the standpoint of our foreign trade. Superimposed upon the disadvantages which domestic cotton manufacturers have suffered in world competition for some time past, he stated, we now have increased cost of manufacture occasioned by shorter working hours and by higher wages. Before adoption of the code, the struggle to retain export trade taxed every resource of our manufacturers and exporters; since application of the code, it has become a losing fight, and foreign competitors are making heavy inroads on our cotton textile export trade the world over. An abstract of the facts presented by Mr. Bailey follows:

SPEAKERS BEFORE C.T.I. MEETING

B. B. Gossett

Ralph E. Loper

Harry L. Bailey

Recent statistics show that our exports of unbleached sheetings 40-in. and under, in June were 5,523,000 sq.yd.; in August they were 2,543,000 sq.yd. Exports of denims in June totaled 902,000 sq.yd. and in August were reduced to 474,000 sq.yd. The figures for chambrays show 1,470,000 sq.yd. in June, compared with 668,000 sq.yd. in August. Under the classification "Other Printed Fabrics" June exports were 1,833,000 sq.yd. while in August they were 1,279,000 sq.yd. Decreases in the export yardage of other finished fabrics show the same trend.

Japan is particularly aggressive in competing for business in what heretofore have been the best markets for our textile exports. For example, our export market in Cuba absorbed $3,500,000 worth of American piece goods in the year 1932; in the last three months Japan has sold $1,000,000 worth of piece goods there—the equivalent, if continued at this rate for the entire year, of our entire Cuban piece goods business.

The same situation was extending to the Philippines, our largest export market for cotton goods. Despite the fact that our goods enter that market free of tariff duties, Japan can land goods there at prices sufficiently low to enable her exporters to surmount the tariff barrier and take business away from American exporters. A comparison of prices reveals the reason. On gray goods, for example, the Japanese price in Manila for 36-in. 3.33 yd. fabric is 4¼c while the price on American goods is 8¼c. Similarly, the Japanese price on pajama checks in Venezuela is 5½c per yd. compared with 9c for the American fabric.

Our textile export business has averaged about 7% of the total production of cotton maanufacture in this country; in money value this business has averaged over $100,000,000 annually. Expressed in yardage, it represents over 500,000,000 sq.yd. per year, furnishing employment for over 35,000 employees and over 1,000,000 spindles. To permit our export trade to be destroyed cannot but seriously retard the effort to rehabilitate the domestic industry. The maintenance of our place in foreign trade has an importance far greater than is reflected by the figures showing that it represents 7% of our production.

Difficult questions also have arisen in regard to imports. Higher domestic prices due to the code have made us more vulnerable to foreign competition in our own domestic market. Already in some branches, imports have had destructive effect.

August was the fourth consecutive month in which imports of all kinds were greater in value than in the preceding month. It was the third consecutive month in which imports exceeded those of the comparative period of the preceding year. In August, total imports increased 70%, against a year ago, and the unfavorable trade balance was the largest since March 1926.

Here again, Japanese competition is the greatest menace. Japan is not only winning our export business in gray and bleached sheetings, denims, colored cottons, and in fact all staple goods but Japanese exporters are after the American market also.

In 1930, our imports of cotton floor coverings totaled 4,302,000 sq.yd., valued at $1,715,000. In 1932, these imports were 9,415,000 sq.yd., valued at $3,707,000. For seven months of the present year, these imports were 7,665,000 sq.yd., with a value of $1,990,000. Imported cotton rugs of various kinds are deluging our home market. One type of Japanese cotton chenille rug can be landed here at 42c, while the cotton content alone of a similar rug of American manufacture would cost over 72c.

A similar situation is illustrated by fish netting. Japanese netting, 1½ in. mesh 10-6/ply thread is offered delivered duty paid on the Pacific coast at $43.47 per 100 lb. while the price of comparable American nettings is $127, the cost of the thread alone manufactured in American mills being more than the entire cost of the Japanese product.

The American cotton manufacturer operating under the higher costs imposed by the code, and facing this character of foreign competition, is in an intolerable situation which only prompt action can relieve.

The remedy for this intolerable situation might be in the form of an equalization fund applicable to exports. With the support of such a fund, manufacturers could meet foreign price competition in markets already established, and preserve a trade which is threatened with extinction, while the fund need not be a burden upon the American taxpayer, since it could be set up from receipts from the processing tax on imported cotton goods, and the compensating taxes provided in the Agricultural Adjustment Act on materials competitive with cottons. Representations have already been made to Washington by the Cotton-Textile Institute and the Textile Export Association, and the proper officials have been fully informed as to the existing situation and the suggested method of relief. Action is imperative; we urge that relief measures for this critical situation be both prompt and adequate.

Sharp Gain in Membership

A most encouraging report on membership in the Institute was presented. On the day of the meeting, 470 mills were members; 253 mills had been added during the past year. On the spindleage basis, the total addition during the year was 8,084,000 spindles. The Institute now has represented in its membership 21,500,000 spindles, 9,900,000 North and 11,600,000 South.

Directors elected at the meeting were as follows:

For three years: W. D. Anderson, A. H. Bahnson, S. M. Beattie, James A. Burke, G. Edward Buxton, A. E. Colby, Donald Comer, W. W. Coriell, Philip Dana, A. E. Davis, F. C. Dumaine, A. M. Fairley, F. A. Flather, R. H. I. Goddard, L. O. Hammett, Weston Howland, J. A. McGregor, John McMahon, W. S. Montgomery, W. B. Munson, Jr., A. G. Myers, Frank I. Neild, Ralph C. Perkins, R. L. Stowe, Thomas H. Webb. *For two years:* F. H. McDevitt, T. H. McKinney, George R. West, Jr. *For one year:* John B. Clark, Stuart H. Johnson, Homer Loring, W. F. Staples.

At a meeting of the directors held later in the day, the following officers were elected: President, George A. Sloan; vice-presidents, G. Edward Buxton and Donald Comer; treasurer, Gerrish H. Milliken; secretary, Paul B. Halstead. New members of the executive committee include Alfred E. Colby, Walter S. Montgomery and K. P. Lewis.

ADVERTISING PAGES REMOVED

THE PERSONAL PAGE

H. P. Kendall

Henry P. Kendall, president of Kendall Co., Boston, and member of Secretary Roper's Business Advisory and Planning Council, has been named a member of the National Industrial Board of the NRA, effective Jan. 1 under the new "rotation plan." **W. J. Vereen,** of Moultrie, Ga., and **David R. Coker,** of Hartsville, S. C., will retire from the board Dec. 1.

W. S. Nicholson and **Herbert Morrow,** who have been assistant deputy administrators, NRA, have been appointed deputy administrators.

J. P. Taylor Armstrong, formerly an official of the Corticelli Silk Co., New London, Conn., before its merger with the Belding-Heminway Co., has been elected executive vice-president of the Belding-Heminway-Corticelli Co.

A. E. Duncan, chairman of the board of the Commercial Credit Co., has been elected a director of Textile Banking Co.

Raymond S. Bartlett, formerly selling agent for the American Woolen Co. and more recently in the consulting engineering business, is reported to have joined the Peerless Woolen Co., Rossville, Ga., where he will have charge of manufacturing.

Herbert A. Weiller has been elected vice-president of the Strengs Dye Works, Inc., Paterson, N. J.

Major Arthur E. Goyette, proprietor of Joseph Noone's Sons Co., Peterborough, N. H., and Miss Hazel L. Livilla were married in New York on Oct. 27.

John A. McFalls, who recently resigned as superintendent of the Mooresville (N. C.) Cotton Mills, has become general superintendent of Morgan Cotton Mills, Inc., Laurel Hill, N. C., with plants in Laurinburg, Raeford and Laurel Hill, N. C., and Quitman and Millen, Ga.

J. T. Honeycutt, formerly superintendent of Rex Spinning Co., Ranlo, N. C., has been named general superintendent of Faytex Mills, Inc., Fayetteville, N. C.

D. R. Senn, formerly superintendent of Enterprise Mfg. Co., Augusta, Ga., has been appointed general superintendent of this mill and the Sibley Mfg. Co., also of Augusta. **C. C. Page** has been promoted to the position of superintendent of Enterprise Mfg. Co.

William F. Sumner, who has been with Mooresville (N. C.) Cotton Mills for several years, has been promoted to superintendent, while **C. W. Gunter** has been promoted to assistant superintendent of the same plant.

R. P. Sweeny, of Greenville, S. C., who has been engaged in the textile machinery business, was recently appointed superintendent of the Exposition Cotton Mills, Atlanta, Ga.

George E. Wilson, Jr., former mayor of Charlotte, N. C., has become associated with **Charles L. Okey** in directing the affairs of the Charlotte Knitting Co.

James A. Campbell has resigned his position with the Barre (Mass.) Wool Combing Co. to take up new duties with the American Woolen Co., Lawrence, Mass. Mr. Campbell is a past chairman of both the Textile Division and the Providence Section of the American Society of Mechanical Engineers.

M. A. Law, who graduated from the N. C. State College Textile School in 1932, is now superintendent of the Rodman Heath Cotton Mills, Waxhaw, N. C.

W. A. Green has returned to Chautauqua Worsted Mills, Jamestown, N. Y., as superintendent, a position held prior to the temporary closing of the mills a year ago. In the interim, Mr. Green was superintendent of the Lymansville (R. I.) Co.

C. Palmer Dill, who has been overseer of weaving at Brandon Corp., Greenville, S. C., for several years, has been promoted to superintendent of the Woodruff (S. C.) plant of the same company, succeeding **J. N. Smith,** who retired because of poor health after serving in the same capacity for 29 years.

George H. Rhodes has resigned his position as chemist at the Slatersville (R. I.) Finishing Co., division of the Kendall Co., to accept a position as research chemist at the American Printing Co., Fall River.

J. B. Rhinehardt has been appointed assistant superintendent of the spinning division of the Loray plant of Manville-Jenckes Corp., Gastonia, N. C.

Alan B. Sibley, who has been with Laurens (S. C.) Cotton Mills for several years, has been appointed assistant superintendent.

C. E. Folk is now superintendent of Duchess Fabrics Corp., Statesville, N. C. He formerly held a similar position with J. H. McAden, Inc., of Charlotte, N. C.

Jac Hood, formerly of Taftville, Conn., has been made assistant superintendent of Ladlassie plant of Gossett Mills, Anderson, S. C.

William A. Spellacy has been engaged as New York representative of the Claytex Mills, Inc., Clayton, N. C., manufacturers of carded yarns.

J. G. Sanders, overseer of spinning, Cotton Mill Products Co., Mobile, Ala., has been appointed superintendent of the Mobile plant, succeeding **George W. Turnipseed,** who recently resigned.

W. L. Phillips is superintendent of the Lullwater Mfg. Co., Thomson, Ga., which will soon be put into operation.

Dorrys E. Bennett, Greensboro, N. C., is now assistant superintendent of the designing division of the Roanoke Mills Co., Roanoke Rapids, N. C. He was recently graduated from the Textile School of the North Carolina State College.

William Stewart has accepted a position as boss grinder and setter of shears with the Chas. P. Cochrane Co., Philadelphia.

L. H. Hodges

Luther H. Hodges, who has been connected with the company for 14 years, and **W. D. Carter,** for several years plant manager of the Nantucket and Lily mills, have been appointed joint managers of the Carolina Cotton & Woolen Mills Co., with headquarters at Spray, N. C. They will direct the operations of 14 plants located in Spray, Draper and Leaksville, N. C., and in Roanoke and Fieldale, Va.

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Obituary

C. Prescott Knight, aged 72, former vice-president of the B. B. & R. Knight Co., died at his home in North Kingston, R. I., on Oct. 29. Mr. Knight retired from the company in 1920.

Thomas H. Dinneny, aged 40, publicity representative for the National Association of Cotton Manufacturers and for several textile concerns, died suddenly at his office in Boston, Oct. 14.

Thomas Woodhouse, F.T.I., a foundation member of the Textile Institute of Manchester, England, and for some years head of the textile department of Dundee Technical College, died at Blackpool, England, Oct. 9. His contribution to textile technology includes numerous text-books and technical articles, many of the latter published in TEXTILE WORLD over the last quarter of a century.

John W. Birch, for 50 years active in selling wool goods, died at his Brooklyn, N. Y., home Nov. 2. For the last 15 years he operated as John W. Birch & Son.

Frank G. Daniels, aged 60, president and managing director of the Dominion Textile Co., Ltd., Montreal, died at his home in Westmouth, Canada, Oct. 16.

John F. Rogers, aged 62, former manager of the Norwich, Conn., branch of the U. S. Finishing Co., died Oct. 10. Mr. Rogers retired last July.

Lewis F. Allen, aged 69, treasurer of the Dinsmore Mfg. Co., Salem, Mass., died at his home in Lynnfield, Mass.

William H. Rometsch, aged 74, secretary and treasurer of the Fletcher Works, Philadelphia, died at his home in Mount Airy, Pa., on Oct. 11.

William T. Elkinton, aged 73, chairman of the board of the Philadelphia Quartz Co., died on Oct. 25.

Carleton S. Pollard, assistant agent of the Willimantic, Conn., plant of the American Thread Co., died on Oct. 26, aged 54.

J. George Newton, aged 46, superintendent of the acetate division of the Tubize-Chatillon Corp. at Rome, Ga., died recently.

Overseers'

THIS DEPARTMENT—

offers a new subject for discussion each month and gives readers' comments on problems introduced in previous issues. The subject opened in September is closed and summary of contributed ideas is given on opposite page. Overseers and others are invited to discuss the subject presented under the heading "Keeping the Mill Looking Neat," and other questions brought up in the super's talks. Letters accepted and published will be paid for without regard to length. Brevity is desirable.

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What to Do About a Second Shift

Editor, Overseers' Round-Table:

A mill having orders enough to run 60 hours requires a second shift. The mill owner, for economic reasons, prefers daylight running. The help also prefer it and turn out better work. The ideal way would be to have each shift work under the same conditions. To do this I would work each shift 60 hours before changing. One shift would work 10 hours a day starting on Thursday and running through the following Wednesday (Sunday excepted). The second shift would do the same thing starting the second Thursday. This plan makes Sunday divide the hours so that no operator works more than 30 hours per week. If the pay-roll is made up on Saturday night, each operator would receive pay for 30 hours, which is to be preferred to 40-hour pay one week and only half the amount the following week.

Should the law not allow an operator to work over 8 hours per day, I would arrange to run a 6-day week with a morning shift from 7 a.m. to 12 noon, and an afternoon shift from noon to 5 p.m. To do this justly, the shifts would exchange every alternate week so that workers on each shift would have the afternoons and evenings of their special week to spend in recreation or for profit. R. J.

Editor, Overseers' Round-Table:

The question, "How would you handle the dividing up of the shifts in order to operate the plant 60 hours a week," should be given two answers instead of one:

1. If the plant has been running two, full 40-hour shifts and is to be cut down to 60 hours a week, then the dividing of hours should be done equally, 30 hours for each shift.

2. If the plant has been running but one 40-hour shift, and enough business is secured to operate the plant 20 hours more a week, the original shift should be given the advantage of fulltime. The proper thing to do, in this case, is to hire only a half force for the second shift and let them also work full time. A half force working 40 hours would be equal to a full force working 20 hours. THOMAS AYERS.

KEEPING THE MILL

"I'VE been quite impressed," Superintendent Chase remarked as the meeting opened, "by the difference in some mills that I happen to have visited lately. For example, in one mill there were bags of waste in the corners, old packing boxes of empty bobbins or paper cones, trucks of full bobbins and cones more or less standing about, tools and broken quills on the window-sills and all that sort of thing. In another mill there didn't seem to be anything lying around. In fact the plant looked as though the machinery were set up for some exposition. Why is it that some mills are so much neater than others?"

"I believe in keeping floors clean and all that sort of thing," Bill volunteered, "but I also believe that many mills carry this neatness business to the extreme. It's all very nice not to see trucks of such things as full or empty bobbins standing about, but if I'm running a winding machine I want to have a supply of yarn ahead of me and a place to throw the empty spools, bobbins or whatever they happen to be. I don't want to go touring about the mill to get yarn when I need it and I don't want to carry each box of empty bobbins all over the place whenever one is filled. In the same way, I can't take time from my work to dispose of a broken quill so I leave it somewhere. Every so often someone can come around and clean up, but I think this business of making a mill look like a parlor all the time wastes a lot of time and energy."

"I'll tell you what the trouble is with mills that have a lot of

Editor, Overseers' Round-Table:

Arranging shifts to operate a plant 60 hours per week, with labor on a 40-hour week basis, unveils two essentials: (1) the necessity for minimum production costs, and (2) the maintenance of an adequate labor force. Much must depend on local circumstances and, since general business conditions preclude extensive forward planning, emergency measures are needed.

Consideration of the problem suggests two remedies: (1) division of the working week into two shifts of 30 hours each, and (2) two shifts of 40 hours each on the basis of reduced productive capacity.

Plan (1) affords elastic operations, that is increased hours for labor and machines, when they are necessary, without shift rearrangement or reduced operating force. Efficient operation could be ensured and purchasing power would be divided equally among all workers.

Plan (2) is more radical but of fundamental importance. Changed conditions under the NRA compel a recapitulation of productive forces to meet present and potential demand, since a redistribution of production over the industry is inevitable. A textile company must operate on the basis of present and potential demand occasioned by changed conditions. If a 60-hour week is found proper under present conditions, instead of, say, 80 hours, it would be advisable to reduce productive capacity by one-quarter and operate on two shifts of 40 hours each. As demand increases—which is inevitable as consumption increases consonant with a limitation of plant expansion—additional equipment can be employed and extra workers engaged. In the meantime, workers unemployed will be able to seek profitable employment in other plants, prospects for which are at present very bright. K.W.

Editor, Overseers' Round-Table:

I would like to offer a plan I think will solve the problem for the mill that receives enough business to operate 60 hours per week. This system has been used, by the

Round-Table

LOOKING NEAT

trucks of material standing about." Pete retorted. "Such mills simply don't route materials properly. If things are planned right, the yarn arrives at the winding machine Bill speaks about at the proper time, and it isn't necessary to have a lot of cases or trucks piled up ahead of the winder. As a matter of fact, you can all see how much extra stock in process there is where such a slipshod system prevails. As for allowing bags of waste, broken quills, tools and such things to stand about, it is absolutely inexcusable. Once you get in the habit, it is no more trouble to *keep* a mill clean than it is to clean up the junk every so often, and you can't tell me that you don't get better work from your operatives in a mill that is neat. It stands to reason that if I'm an operative and I see things lying around in a careless manner, I'm going to be careless about doing my work.

"Then there is the accident question. The more un-needed stuff that is around the place, the more chance for an accident. I believe that it is the duty of the management to schedule things so that there isn't an excess of material, or empty bobbins or spools standing about, and I believe it is the duty of the overseer to train his help so that the room is clean all the time and not just for a short time after a spring cleaning."

► **What are *your* views on the problem of keeping a mill looking neat?**

SUMMARY

DIVIDING SHIFTS. The problem of how work should be divided between two shifts when the mill ordinarily can secure enough business to run somewhere between 40 and 80 hours per week (the median figure of 60 was used for the sake of the discussion), brought out many interesting replies. A majority of contributors, 59% to be exact, favored a straight split of the work between the two shifts. Thus, if the mill ran 60 hours per week each shift would work 30 hours. A number of different plans were put forth by the remaining 41% of contributors. Among them might be mentioned: running two shifts 40 hours each, but reducing productive capacity in accordance with demand; running a full day shift and as much of a night shift as conditions warranted; having each shift work 40 hours one week and 20 hours the following week.

▼

mill by which I am employed, for the past four years. The results are that we have not been on short time at all and have a very low percentage of lay-offs.

Our system in short is this: We operate on day shift of full capacity and a second shift which varies in accordance with the rush in business. When business becomes dull, this second shift is cut down to a nucleus and then is built up as business increases. This will enable the mill to furnish most of the employees with a full week's work the entire year, which I believe to be very important.

Why not work a full crew on the first shift 40 hours per week and a half crew 40 hours per week on the second shift? If this works out difficulties due to the layout of the machinery, try two shifts, of three-fourths capacity, 40 hours per week.

C.F.

Editor, Overseers' Round-Table:

Our plant was beset with a very similar problem. We had just about 60 hours of work during the week and had to divide it among two shifts. To the employer, it meant nothing whether it was decided one way or another. Therefore, we put it up to the workers themselves. A general vote was taken and the vast majority wanted to work 40 hours one week and 20 the next. This would give them one full week's pay and leisure during the next week if they could find something else to do.

However, the final solution was even better. By the general good feeling caused between the workers and the employer by this method, a new suggestion was made and carried into effect. During the time a particular shift was on for but 20 hours, those who wanted to were allowed the rest of the time to potter about in the laboratory. Any results discovered were promptly rewarded. Others who wanted to learn about the other methods and processes in the plant were allowed to roam about at will.

Then, too, there was another side of the matter. The employees who had no hankering to experiment were allowed to go out after orders. For each new order brought in, they were given the regular salesman's commission.

On first thought, this would appear disastrous—but the results have been amazing. The workers in the laboratory developed several new processes which have been of extreme value to our business. The others who wandered about the plant learned enough to make them become of far more value through a thorough knowledge of everything and some extremely fine overseer material was developed.

In no way did the plant suffer by these seeming laxities. The expense of allowing the workers to roam about and experiment was nothing. The discoveries, new knowledge, the unusually fine feeling between the two groups far more than repaid the employer for his seeming radical step!

W.H.

Editor, Overseers' Round-Table:

If I knew that I had work for the plant for 60 hours each week, I would first determine how many months I could work at that rate. Let's say four months.

I would put on two shifts working at 40 hours each week and in three months, instead of four, the work would be through.

So far, so good. Now, why 80 hours of work by two shifts? I would follow out this plan because it is entirely in keeping with the principles of the NRA and the Administration. The terrible wall around the buying power of the nation might be affected by small blows over a period of time. But, what the country needs right now is *ACTION*. Every employer must understand that it is his duty to provide the greatest possible number of jobs at the highest wages he can reasonably afford to pay. The wheels of industry are held back by their inertia and it is up to the employers, it is up to us, to get them started.

MORRY TANENBAUM.

QUESTIONS AND ANSWERS

Wilton Analysis

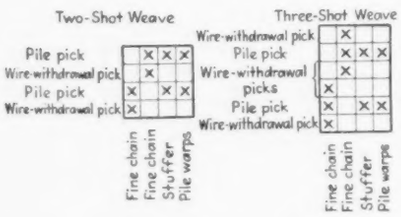
Technical Editor:

I wish to reconstruct a wilton rug or carpet. Will you kindly tell me the method used in dissecting and reconstructing? I wish to be able to tell the reed and wheel required, the size of wire, and anything else that is necessary. Especially do I want to know the tools which are used in dissecting a piece of carpet. (8051)

Wilton-fabric base weaves are of two unaltered types, except in a few special cases. That is, they are either two- or three-shot. Each weave has two cotton binders, the desired cotton or jute stuffer (varying according to the handle and firmness desired), and the pile yarns in each dent.

This standardization of weave has been reached because in a pile fabric no weave variations are seen or desired, as opposed to clothing or other flat-faced fabrics. The weave is required merely to form a firm base for the pile. Due to the combination in a wilton loom of the jacquard for the face-pile pattern and the cam motion for the operation of the fine chain and stuffer, standardization of the weave for the cam motion simplifies the work. Also, a complicated weave presupposes a number of threads, which would leave less room in the warp spacing for the pile threads and thus make for an open, "reedy" surface.

The same limitations (that is, jacquard and loom limitations) and the character of pile fabrics have led to loom pitches being almost universally standardized to a few—that is, to 216, 236, and 256 dents in 27 in.,



or proportionally in wider widths. Likewise, the component face fine chain, stuffer, and filling threads are pretty well standardized within narrow limits and therefore easily identified after a little experience.

The above weave set and component-yarn items, which are important in ordinary cloth analysis, are therefore not obscure or highly variable in wilton-carpet analysis. The items to observe to reproduce a wilton carpet are the following:

1. *Set* is measured by counting reed-dent groups on the back of the carpet. As carpet shrinkage from the reed space to the finished carpet is extremely small—28½-in. reed space giving 27 in. finished width, or 110½-in. reed space giving 108-in. carpet—the shrinkage is not important in dissecting. Pitches given above would, in the loom, be spread out as indicated; that is, 256 warp threads in 28½-in. reed space would give 27-in. finished carpet.

2. *Wires or picks per inch* are also obtained by simply measuring the back picks with an inch measure. This indicates the wires or rows of tufts per inch, and the number usually varies from 8 to 13½ per inch. Actual filling picks are, of course, double that number; that is, there are one face and one back pick per wire. No shrinkage need be considered from picks per inch in the loom to the finished carpet, as it is negligible. The wheel necessary to produce any given number of picks depends on the diameter of the cloth roll, which varies in individual looms. Therefore, to find any given change, only a simple proportion sum is required after the establishment of a basis.

3. *Height and thickness of wire used* can only be estimated, as the shearing and finshing processes remove a portion of the pile face, varying with the clearness of face desired. The amount of care given to the weaving in order to produce a clean face is another factor. Also, a slightly thicker wire, not so high, used in opener weaves will sit upright in the loom and thus give a cleaner and evener surface, and will give the same height of pile as a slightly higher, thinner wire. Wires are usually described in fractions of an inch—that is, .155x.037, meaning .155 in. high by .037 in. thick, Wires used can be estimated rather accurately by inserting a piece of cardboard in the face of a carpet sample, marking it level with the pile surface by means of a sharp pencil, and measuring the height from the bottom of the card to the mark. This measurement must be compared with a similar measurement made on a known sample.

4. *Number of frames of yarn in the sample* can be determined by simply pulling out ends in one dent and counting the individual wool threads contained in the body of the cloth, allowing one for the pile thread. These will vary up to five, or possibly six.

5. *Size of component threads* can be obtained by pulling apart a piece of cloth, holding the yarns under normal tension, cutting a given length, and weighing on a grain scale. In calculating backing threads (jute and cotton) some allowance must be made for starch in them to obtain accurate counts, as wilton carpets are woven with sized warps and sized filling. This can be estimated up to 6% of the face threads or may be removed before weighing by soaking and drying. No other instruments than a good scale, an inch measure, and a foot rule for the No. 5 are necessary.

▼

Cloth Width and Take-Up

Technical Editor:

Please let me know as soon as possible how to calculate the width of cloth off the loom where the width in reed and construction are known. I would also like to know how to figure the take-up in length in weaving. I would want to use this in calculating flat crepes, georgette, and satins. (8048)

The width of a cloth off the loom and the take-up in weaving vary according to the construction; i.e., the ends and picks of the fabric. They also vary where the same construction is running on two looms side by side, and even in a single fabric on the same loom. They can be affected by the mechanical condition of the machine and by changing atmospheric conditions. It is therefore practically impossible to form a set rule for the weaving in and take-up in weaving.

Certain types of flat crepes weave in about ½ in. and take up about 3½%; others take up more according to pickage and warp count. Georgette will take up about 5%, the exact amount depending mainly on warp count and picks. Satins have been run with as low a take-up as 2½% for the standard 60x80 construction, but in this case the loom has been equipped with a let-off and has carried plenty of weight.

Without knowing what specific constructions you have in mind, it is impossible to give you a practicable working basis for these calculations.

▼

Hosiery Needle Breakage

Technical Editor:

We are enclosing a stocking which was knit on a 42-gage machine. You will notice a run in the foot which was caused by a broken needle. We are having trouble from needle breakage in the silk. The needles are corroded, also the sinkers and the dividers, where the silk yarn is being knit.

Our opinion is that the throwster is using a mineral oil in throwing the silk, which is causing some sort of a chemical reaction on the needles and sinkers. Would an analysis of the silk yarns show any trace of a mineral oil or other lubricant which the throwster is using that would cause this trouble? As yet we have not tried silk from a different throwster.

The knitting machines have been checked for press and other mechanical difficulties, which may also cause this trouble, but these conditions have been found to be satisfactory. Both leggers and footers are giving this trouble. (8023)

Your sample does not show evidence sufficient to serve as a basis for an opinion as to the cause of needle breakage. There is only a trace of acid in the sample, which is not enough, in our opinion, to cause any trouble. However, previous production from the same machine might show a different condition.

Your statement that needles, sinkers, and dividers are corroded indicates that the machines have been at some time or other saturated with acid solutions of some kind. This does not necessarily mean the fault is the throwster's. Many full-fashioned mills backwind their silk through a softening solution before knitting. It is important to see that such solutions are neutral, or preferably slightly alkaline, and that they remain so throughout their existence. We have known such solutions to test neutral or slightly alkaline when first made up, but to turn strongly acid after remaining in the troughs on backwinders and in the cups or troughs on the full-fashioned machines, where they become contaminated with sericin and other foreign matter in the raw silk and are affected by atmospheric conditions. Some silk-soaking solutions which have been put on the market have been found to be on the acid side. Such

QUESTIONS AND ANSWERS

solutions should be religiously avoided, and any solution adopted should be checked occasionally for acidity. A careful investigation at these points may reveal the source of your trouble.

An analysis of the silk yarn by any good laboratory would show whether or not the soak was acid or alkaline, and would also show whether or not a mineral oil was used in the soaking solution. Mineral oil, if of the right amount and character, is not objectionable.

As a further suggestion regarding a possible acid condition of the machine, we would say that if the brass parts of the sinker head and other brass parts of the machine show a greenish deposit or verdigris, this in itself is sufficient evidence of an excessive acid condition of the machine. The mill is responsible for such a condition. A full-fashioned machine should be thoroughly cleaned at least once a week, and at least once a month the sinker head should be thoroughly cleaned with kerosene oil or some similar cleaning compound, after which it should be thoroughly oiled with a rust-preventing oil.

Finally, it is possible that the cause of corrosion of the needles and sinkers may not have disappeared, but that during the period of exposure the needles were sufficiently corroded to cause an excessive needle breakage until the needles affected are finally eliminated.

▼

Hosiery-Narrowing Layout

Technical Editor:

Could you possibly give me the general practice used for the narrowing layout on full-fashioned stockings, knitted on 42-gage machines, with four-thread, hard-twist silk, 18 turns, 13/15 denier, giving me how many flare narrowings and how many leg, heel, gusset and toe narrowings? (8025)

It is really impossible for anyone to give the average narrowing layout for a 42-gage, high-twist, 18-turn stocking, because this depends on (1) the number of courses knitted to the inch, (2) whether a full needle bar is being used, (3) the number of threads, and (4) the kind of boards the mill uses. This last point is especially important, because it is often best for a mill to construct its hose to fit its own board dimensions rather than the so-called average leg.

We might suggest, however, that, if the hose is to be knitted up tight, three flare narrowings would be satisfactory; and naturally as many more courses would be put in between the last flare narrowing and the first leg narrowing as there are extra courses knitted per inch for a tighter fabric. Then, if the calf of the boards has the average reduction in shape per inch, it would be well to put two more courses between each leg narrowing so as to keep the regular appearance. If the fabric is much tighter than average, you will need fewer leg narrowings; and if the heel is to be kept the regular width, the instep (between the two heels) must be widened the same number of needles that the whole ankle is wider, because of the fewer leg narrowings. The instep on the footer will also need changing in order to "match" the instep or pressed-off portion of leg between

the heels. If the footer is using the full 10-in. width, there will be no need to make any change except to match the fabric. You will have to experiment a little in order to get the desired effect.

▼

Defect in High Splicing

Technical Editor:

I am enclosing a stocking showing a defect in the high splicing on the right side. This trouble is found only on a few sections at times; a complete set like the stocking submitted has never come off the machine. The defect does not always appear on the same section. You will note that the high-splicing starts correctly at the beginning; then it presses off the stitches. Sometimes it picks them up again and works correctly. This trouble may show up on a few sections for one and two sets; then the next few sets on the same section are perfect, and on later sets we have it back again. The splicing is seven-thread Japan tram. Can you give me any suggestion as to what may cause this trouble? (8034)

This trouble is usually traceable more to excess tension on the splicing yarn than to any other one cause. It can come from improper carrier adjustment, through the carrier tube being set slightly too high or the carrier finger not having quite enough swing or stroke to the inside; that is, from the selvage edge of the heel to the inside selvage or stopping point of splicing. We advise checking up on the carrier adjustment to be sure that setting is right, and then follow up by careful adjustment of the high-spliced yarn tensions. It may be necessary practically to eliminate all snapper tension. These opinions and suggestions are based on the natural assumption that you have split or selvage dividers in your sinker heads at the point of the high-priced heel. If this is not so, we strongly advise the use of the selvage sinkers.

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Cleaning Silk

Technical Editor:

It was my privilege some few months ago to witness the results of the illuminating and magnifying machine developed by Warren P. Seem. The natural defects of raw silk stood out plainly. It is fortunate that we have men of Mr. Seem's caliber in the industry.

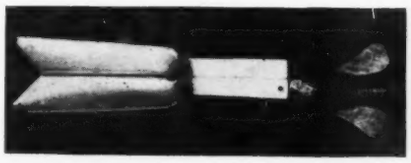
Recently my attention was directed to the cleaning of crepe yarns by a throwster. It seemed a travesty that this 2-thread, 20/22-denier, 55/60-turn yarn should be redrawn, after twisting, through a cleaner set at 5/1000 in. The yarn itself gaged 3/1000 in. with a micrometer. The cleaner would arrest only a bunched lot of waste or a clumsy bunched knot. To my thinking, we are wrong in cleaning a spun thread.

When I was first employed in a silk mill, some 58 years ago, it was as a half-timer on cleaning and piecing; that is, I worked a half day and then went to school a half day, changing every other week from morning to afternoon. The accompanying photograph shows one of the cleaners I employed. This was set in a slot in the guider. As we cleaned the single raw thread, such defects as stubs, loops, and waste were removed. The cleaner was checked daily by the steward or foreman with varying sizes of tissue paper, according to the denier of the silk we were cleaning. Each boy or girl tended approximately 50 threads. We were expected to clean so many pounds per week, and over and above that quantity we got a small bonus.

Each boy was given a piece of leather ¾ in. wide with an inverted hairpin forming a hook with a hole at the opposite end, and each girl was given a large brass pin. The boys put the hole on a button on their vests or waistcoats. Any stoppage at the cleaner was taken out, a finger knot tied, and the tail ends put on the hook on the leather strip and sheared off close. At stopping time these nippings were turned in, and the throwster sold them to a spun-silk manufacturer.

Defects under today's methods are twisted into the finished yarn, which, when boiled off, is loosened and swollen. If the goods are weighted, these defects are further accentuated.

Recently Japanese interests have proposed to spend several million yen to boost the further use of silk in America.

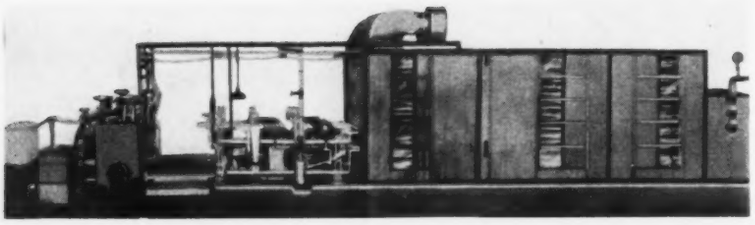


The idea in this promotion is all right, but wouldn't it also be well for the Japanese to devote a little more attention to the elimination of defects in the raw product? Hosiery manufacturers complain that the public objects to the rings found in hosiery as the result of uneven raw stock. Broadsilk manufacturers make a similar complaint. They say that during the last two years conditions have become worse, rather than better. Our throwsters say that cleaning raw silk is too expensive, both in labor and machinery.

We should ask our Japanese friends to devote some of the money they appear to have available to the purchase of cleaning machinery, which they could operate economically with their low labor costs. They could then give us raw silk free from such defects as bad casts ,waste, slugs, knots ,nibs, and thick pieces, probably costing us 5 or 6c. per pound. There is no doubt room for improvement in sericulture, which is the original source of silk. The result of such fundamental improvements might be that it would be unnecessary to tear the thread apart in order to remove defects and obtain a perfect yarn.

ERNEST BARBER.

NEW MACHINERY



Continuous Processing of Tubular Knit Goods

A MACHINE that extracts, processes, dries, finishes, conditions, and measures tubular knit goods in one continuous operation has been announced by H. W. Butterworth & Sons Co., Philadelphia. Known as the "Tube-Tex," this machine is said to have a capacity of 2,800 to 3,000 lb. for the 8-hr. shift, and to produce a wide range of finishes. Only two operators are required for this machine, with an additional worker needed for sorting and sewing. Advantages claimed for the new equipment are: saving of 10 to 25% in horsepower, 50 to 75% in floor space, 50 to 75% in labor costs, and a considerable economy in steam consumption. Losses at the end of the rolls do not exceed 3 in.

In the processing operation, the fabric passes through the machine in continuous endless length at the rate of from 25 to 35 yd. per minute. The fabric can be taken directly from a dye beck, passed through pot eyes, and afterwards opened up fully by a driven spreader. After it is stretched to its full dimension by the spreader, the fabric is passed through the liquid for delustering, sizing, etc., and then through the squeeze rolls.

From this unit the goods pass into the dryer, which has five horizontal air passages. The bottom passage holds four layers of fabric; and each of the other passages, three layers. The fabric is carried through the dryer, free from tension, except where tension is applied by spreader units. Tension is applied to the fabric as it emerges from the dryer, in order to insure uniformity, and the goods then enter the final finishing machine.

In this section of the equipment, the fabric is steamed from top and bottom and opened up by the driven spreader. It is steamed again and passed through the finishing rolls. Before being wound up, the goods are cooled by a process which is said to insure the proper amount of moisture.

The drive of the entire machine is accomplished by three motors, which are fully synchronized. The separate units of this machine can be supplied. The manufacturers state that the goods can be taken from the dye kettle and finished in roll form in 5 min. The "Tube-Tex" equipment is particularly adaptable to the finishing of silk, rayon, cotton, woolen, worsted, or mixtures.

U. S. and foreign patents on the "Tube-Tex" are controlled by Tubular Textile Machinery Corp., New York.

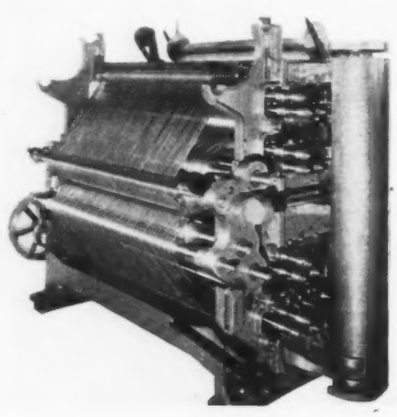
Full-Fashioned Machine

AN Einsiedel full-fashioned hosiery machine which knits the leg and foot continuously, with the exception of the heel, is shortly to be imported from Germany by Robert Reiner, Inc., 550 Gregory Ave., Weehawken, N. J. The heel is knitted on a separate machine. The purpose of the development is to eliminate differences in shade between leg and foot.

Tape Condenser

WHITIN Machine Works, Whitinsville, Mass., recently announced a new model tape condenser for the finisher card in the woolen system. Eccentrics have been designed to withstand a speed sufficiently high to enable the condenser to produce more good roping than the card can deliver, so that the card production is not limited by the condenser capacity. The new model has several improvements and refinements over previous machines of the same make, but there is no direct change in the principle or theory of the tape condenser. All rolls over which the tapes pass are equipped with anti-friction bearings, and the rolls have greater diameter than formerly, thus practically eliminating all drag on the tapes. A positive take-up mechanism, calibrated on either side of the frame, is arranged to take out stretch in the tapes. The main condenser drive is placed closer to the condenser side. Requiring small amount of floor space, it is said that the machine may be installed on any card without the use of a countershaft drive.

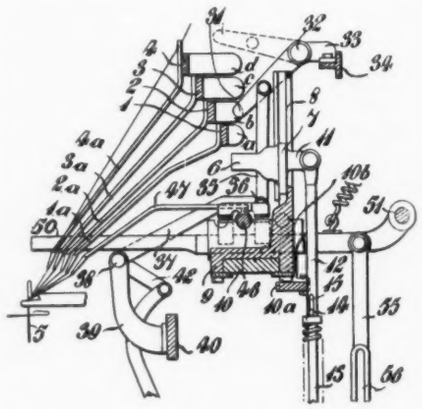
Dividing-roll bearings, which are self-aligning, are equipped with positive locking device so they may be securely held in position. Wider aprons are provided to give a maximum amount of rub. Rub rolls and tension rolls all traverse with the aprons and may be adjusted while the condenser is running. The speed of each bank of aprons may be changed individually without affecting the speed of the remaining three banks. The condenser is arranged so that the speed of all four banks can be changed simultaneously. Self-aligning bearings have been used throughout, while central oiling stations have been conveniently located for lubricating the dividing rolls. Exposed gearings are enclosed in rigid housings with hinged covers. The eccentrics are said to be capable of very high, sustained speed, without vibration.



Ringless Hosiery

THE development of "ringless" full-fashioned hoisery, as controlled by the Textile Patents Corp., Philadelphia, (TEXTILE WORLD, July, p. 106) is said to be based largely on an invention of William Corah, Mansfield, England. The principle employed is the same as that of the multiple-shuttle loom when the latter is used merely to distribute an irregular filling, rather than to introduce different colors or types of yarn. In the case of the loom the theory is that a pick of thin or heavy filling yarn will lie between two picks of normal yarn and therefore its irregularity will be less apparent than would be the case if pick after pick were of the same imperfect yarn. In the case of ringless hosiery, each new course of yarn is from a different cone from the preceding; and instead of multiple shuttles, multiple carriers are of course employed.

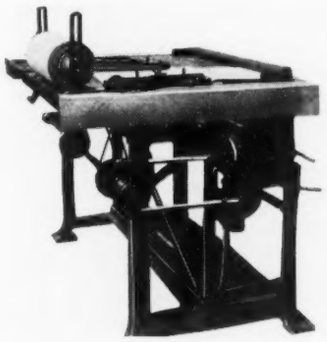
The accompanying diagram is from Mr. Corah's United States patent, No. 1,912,257,



which was originally assigned to Simpson, Wright & Lowe, Ltd., Sutton-in-Ashfield, England, and was granted on May 30, 1933. The invention is described in the patent as a means for producing designs; and it is probable that, in employing the invention for producing "ringless" hosiery, certain modifications have been made. Nevertheless the diagram should serve to explain the principles involved.

There are five carrier bars—1, 2, 3, 4, and 46—which operate the carriers 1*a*, 2*a*, 3*a*, 4*a*, and 47, feeding yarn to the needles 5. Carrier bars 1 and 2 are for ground thread; and 3 and 4, for plating thread. Bar 46 is "preferably employed for thread which is used in the smallest amount of courses," as at the heel. Each of the first four bars has a "nose guide" *a*, *b*, *c*, or *d*. The first two are engaged, when required, by the "nose" 6, which is made to rise and fall through the action of a chain having links of varying height. The chain is

located at the lower part of the machine and is not shown. Parts affecting motions of nose 6 and guides *a* and *b* are numbered 7 to 15, inclusive. Nose guides *c* and *d* are engaged by nose 31, which swings up and down as actuated by the chain. Parts affecting the motions of *c* and *d* are numbered 32 to 40, inclusive. The horizontal traversing movement of the first two guides is imparted by foot 9 sliding on fixed slur bar 10. In the case of *c* and *d* the traverse is imparted by plating bar 34. Carrier bar 46 is connected by friction boxes 10*b* to the continuously traversing slide bar 10*a*. When arm 50 is raised, also by the chain (through 55 and 56), certain teeth on the arm engage with teeth on the bar 46 and hold the bar from moving. The ringless hosiery now on the market indicates that only three carriers are employed for producing the ringless fabric.

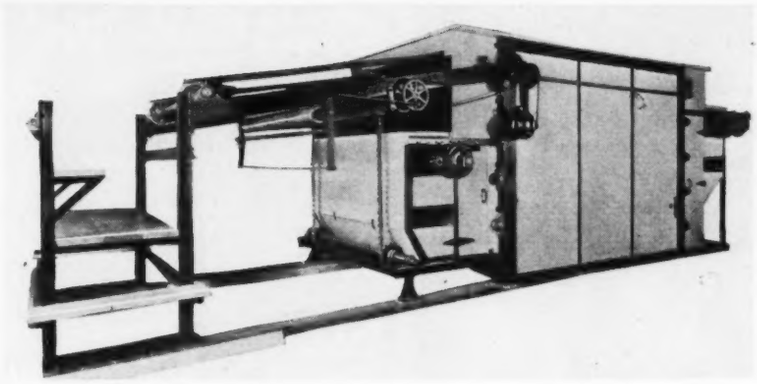


Knit Goods Steamer and Tenter

STEAMING and tentering of flat-knit fabrics is facilitated with a machine developed recently by Harlem Knitting Machine Shop, 1952 Park Ave., New York. The equipment is designed also to handle circular-knit fabrics which show a tendency to curl, roll, or distort. It consists essentially of a steam box, chain-type tenter, and device for rolling-up the goods on paper tubes. The tenter is easily adjustable to various widths of fabric. Among the advantages cited for the equipment are its simplicity; low operating cost; and the fact that it delivers the goods, with all edges straight and flat, ready for immediate use on the cutting table.

Thermic Air Vent For Steam Traps

AN automatic air bypass to promote quick heating and integral with the Armstrong inverted bucket steam trap has been developed by the Armstrong Machine Works, Three Rivers, Mich. A large auxiliary vent is closed by a flat disk, which in turn is riveted to the bucket cap. As long as the trap is cold, the disk is held away from the vent and air escapes so rapidly that the bucket cannot float and close the discharge valve. Air blows through until steam fills the radiator and reaches the trap, causing the thermic strip to seat the disk which prevents steam from escaping through the auxiliary vent.



Cloth Tentering Dryer

CHARLES E. T. SCRIBNER, 11 Kilgore Ave., West Medford, Mass., recently announced the development of a cloth tentering dryer which has several features not available in previous models of this equipment. Special straight finned heater units have been installed at each end of the dryer, and fans are provided to draw the air through the heaters and force it between the layers of cloth lengthwise of the dryer. In addition to being recirculated, the air passes twice the length of the dryer before being saturated and exhausted.

Another new feature is a baffle plate across the dryer, running lengthwise, dividing the drying chamber into two compartments, the upper or wet where the cloth first enters, and the lower or dry compartment where the cloth is finally dried at a lower temperature. The simplified heating method, which is reflected in the general construction of the machine as a whole, is said to have greatly contributed to the ease of operation, cleaning, and repairing of the equipment.

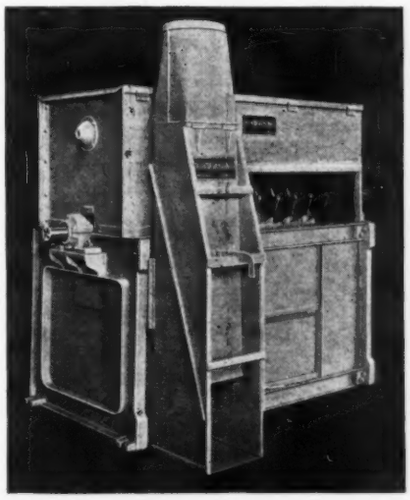
Across the front of the dryer there is a window which allows the operator to see the cloth as it rounds the two top sprockets and thus prevent wind-ups. A door at the front permits the operator to reach the cloth to test its dryness when running, and at the same time affords access to fans and heaters. Another door at the back end affords access to all parts, fans, and heaters.

The feeding and folder arrangement has long guide rails for feeding on the wet cloth and gradually stretching it to its full width. An automatic cloth guider of approved type can be furnished to suit the purchaser. Tenter chain sprocket shafts, which are larger than usual, run in ball bearings and are all located outside the frame of the dryer.

The tenter chain is of special design, made to fit the channel guides, which in turn, are said to keep the oil from the chain within the guide. Pin plates, to suit the purchaser, are usually supplied with stainless steel pins. The dryer is driven by electric motor to a Reeves variable-speed countershaft with a four-to-one ratio, and by roller chain to the cut gears on the sprocket shafts. The frame is made of cast iron and structural steel. In addition to the operating features mentioned, it is claimed that the lengthwise circulation of air in the dryer, made possible by the new type heating unit, has eliminated side to center shading in this machine.

Centrif-Air Machine

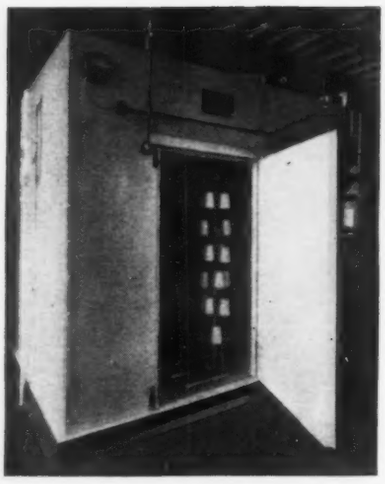
CENTRIF-AIR MACHINE CO., Atlanta, Ga., has announced an improved model of the "Centrif-Air" adjustable cotton-cleaning machine. The new model (No. 5) is of fireproof construction throughout. The top and screen are made of ¼-in. rolled steel; the side frames, of channel iron; and the end frames, of gray iron. The main cylinder is mounted on steel shaft carried in SKF self-aligning ball bearings. The top cover



is hinged and may be raised to permit easy access to the cylinder and screen. The makers do not recommend that the machine be used to handle more than 1,500 lb. of cotton per hour. Operating speeds are from 300 to 450 r.p.m., depending upon the length and condition of staple being run.

Silk Conditioner

FOR conditioning silk on cones, equipment of the type installed at the Belmont Hosiery Co., Belmont, N. H., and described in our July, 1933, issue, has recently been placed on the market by the Industrial Dryer Corp., Stamford, Conn. The machine, known as the H-W conditioner, is now available in three standard sizes, of 384-, 576-, and 1600-cone capacity. The capacity is based on 9-oz. cones, but the machines are flexible, permitting the use of



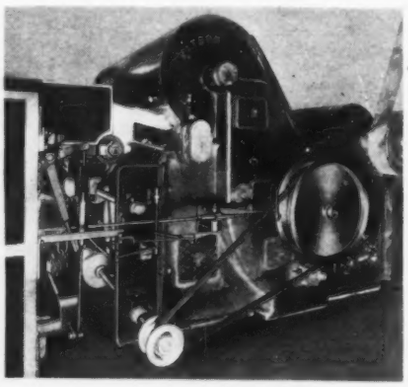
larger or smaller cones. Each conditioner is supplied with one or more holding trucks so that a charge of conditioned silk may be placed in these trucks and held in condition until it is placed on the knitting machines, while at the same time another load can be conditioned in the machine. The conditioning time varies, depending on the condition of the silk itself, the average time being about 9 hr.

Improved Pick Counter

WALTHAM WATCH CO., Waltham, Mass., recently developed an improved pick counter with several features tending to increase the strength and durability of the mechanism. The case, which is dust- and water-proof, consists of a one-piece casting, the cover of which is attached with screws that cannot be tampered with except by breaking a lead seal and removing the counter from the loom. Cut gears are used throughout to reduce internal wear and provide smoother operation. There is an improved clutch with both driven and driving faces made of hardened steel. Counter wheels are made in one piece from solid brass and are placed close together. Lubrication is internal in order to prevent oil from getting on faces of counter wheels. The driving unit, enclosed in a die-cast housing, consists of heavy Universal joints at the upper and lower ends of the drive rod, and is provided with an Alemite push-type fitting for efficient lubrication. The driving worm is of machined cast iron, driving a hardened steel pinion, while the worm housing is anchored to the floor or loom with a steel rod, installed to allow the housing to float freely and thus reduce friction and wear to a minimum.

One-Process Picker Change-Over Equipment

SACO-LOWELL SHOPS, 147 Milk St., Boston, Mass., have developed new change-over equipment for converting old pickers to one-process. The accompanying illustration shows details of the mechanism used in combining the breaker and finisher. The calender of the breaker is removed. A new auxiliary cone panel is bolted to the milled surfaces which are exposed by removal of the calender head; thus the cone motion becomes an integral part of the breaker. A new fan drive, similar to that used on the late-model one-process pickers, and arranged to drive the auxiliary cones, is also provided. While the auxiliary pair of cones is driven independently of the old evener motion, the two mechanisms are connected and operate



together. This causes the feed of the breaker to change at the same time and to the same extent that the feed of the finisher is varied. A new drive to the side shaft, including a tight-and-loose pulley combination, is furnished.

There is less load on the cone belt than formerly, and it is possible to stop the machine at any time during the formation of the lap without breaking the sheet. To change the rate of production without changing the weight per yard of the lap requires only the change of one feed pulley. as the breaker, in synchronism with the finisher, is taken care of automatically.

Bobbin with Removable Head

A SILK- or rayon-type double-headed bobbin with one head removable has been developed by I. G. Farbenindustrie, Germany, and introduced to the American and Canadian textile trades by the Adolff Bobbin Company, Inc., Kearny, N. J. The purpose of the removable head is to facilitate unwinding of the bobbin over-end, which can be conducted with particularly even tension and at high speed.

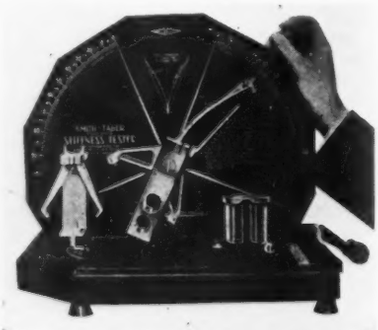
The bobbin is claimed to reduce thread breakage and to permit better and more even twisting of the yarn.

When the bobbin is held vertically with the removable head uppermost, the inner side of the lower head shows a colored ring. When the bobbin has been unwound sufficiently to make this ring visible, the outer ring of the upper head can be removed, leaving a head of smaller diameter sufficient to hold the remaining layers of silk or rayon on the bobbin. The outer ring requires only a slight twist for its removal.

Stiffness Tester

FOR measuring the stiffness and elasticity of flexible materials, such as paper and cloth, Smith-Taber, research engineers, North Tonawanda, N. Y., have developed an instrument, known as the Model "E" precision tester. The tester is designed to give an accurate numerical determination of pliability, commonly known as "body" or "feel," thus making possible a numerical rating of various weaves and weights of fabrics for pliability. The effect of different sizings and coatings on textiles may be determined.

The specimen strip of material being tested remains bent at the standard angle throughout the duration of the test. Tungsten-steel contact points prevent stressing the specimen beyond the standard 22½° angle and also form an electrical contact which flashes a signal the moment the full bend occurs, thus indicating the position where the initial reading is to be taken. By taking successive readings at 3-min. intervals, continuing until the plastic flow has practically ceased, the basic stiffness of the material may be determined. The 200 graduation dial and three ranges of sensitivity (20, 200, 2000 units) allow the testing and measuring, in stiffness units,



AND PROCESSES

of a wide classification of materials. Readings may be charted on cross-section paper, and the resiliency of the specimen rated on a percentage basis.

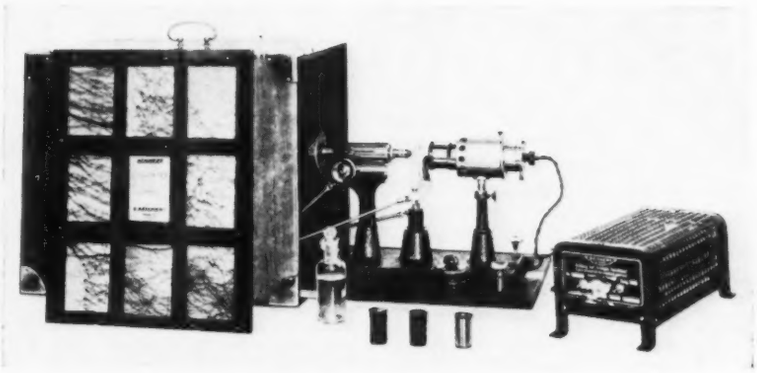
New Model Humidifier

A NEW Type C humidifier, featuring increased capacity and sensitive, individual, automatic control for each instrument, has been developed by the Southworth Machine Co., Portland, Me. With respect to capacity, the manufacturer states that the use of a larger disk with more teeth and a fan of more than double the capacity of previous models gives a finer spray and approximately twice the amount of moisture. It is estimated that under normal conditions one humidifier will take care of approximately 20,000 cu.ft. of space.

Each head is a self-contained unit with sensitive, individual control, which operates automatically; and it is said that this feature enables the humidity to be held uniform throughout a room. The controls start to operate within 2 min. of any change in atmospheric conditions; and the manufacturer states that the relative humidity of a room can be maintained within 1½ points up or down. The unit is compact and employs a 1/5-hp. motor.

Determines Wool Fineness

THE Lanameter, an instrument for determining wool fineness developed by Dr. H. Doehner at the Institut für Tierzucht und Zuchtungsbiologie, Munich, Germany, has been improved for commercial purposes and placed on the market by the Reichert Optical Works, Vienna, Austria. The instrument consists of a projector which throws a microscopic image of the fiber, mounted in a suitable frame, on to a ground-glass screen or, if desired, to a wall screen. Here it may be compared with images of fibers whose quality and character are known, or the thickness of the individual fibers may be specifically determined by means of a special measuring device consisting of a rotatable disk-shaped screen carrying a cross-sectional graduation in millimeters. If photographs are desired, special photomicrographic equipment can be supplied by the manufacturer. It is reported that after a certain amount of practice an operator can make 100 measurements in 10 min. Pfaltz & Bauer, Inc., 300 Pearl St., New York, are the American representatives.

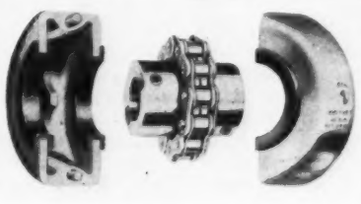


Spindle Brake

FOR silk and rayon throwing and twisting equipment the Emby Sales Co., 1302 Woodlawn St., Scranton, Pa., has placed on the market a new brake to be attached to each spindle. The brake permits the operative to stop the spindle by placing his index finger in the loop to pull the spindle from the belt and by then pressing with his thumb on the brake, as shown in the accompanying illustration. Advantages claimed for this new device are: production of cleaner yarn, due to the fact that the operative does not take hold of any part of the spindle in stopping it to piece up an end, and the elimination of injury to fingers by flyers and spindle whorls.

Roller Chain Flexible Coupling

THE Whitney Mfg. Co., Hartford, Conn., has announced a roller chain flexible coupling for direct power drive applications. This coupling unit consists of two accurately cut roller-chain sprockets coupled together with a roller chain. Proper clearance between the two sprockets is said to allow for slight shaft misalignment, and also is claimed to give a reasonable amount of motor end-float without binding or shaft distortion. The rotating type coupling cover has been developed to protect the mechanism from dirt and thus to permit more efficient lubrication and longer life.



Linen Plant Projected for Chicago

Plans for the erection in Chicago of a plant for the manufacture of linen have been announced by the Gold Shield Mfg. Co. The announcement states that the company will use an exclusive chemical and drying process for retting, together with special decorticating equipment, which will be imported from Germany. It is said that the manufacturing unit as proposed will have a capacity of 80 to 160 tons flax straw and approximately 30,000 yd. of linens a day.

Master Mechanics Meet

Recording instruments for determining power consumption of individual machines, and various problems relating to power plant operation, were discussed at the fall meeting of the Master Mechanics Section of the Southern Textile Association, held at Clemson College, S. C., Nov. 2. Details will be published in the December TEXTILE WORLD.

Textile Calendar

North Carolina Cotton Manufacturers Association, annual meeting, The Carolina, Pinehurst, N. C., Nov. 16 and 17, 1933.

National Association of Woolen & Worsted Overseers, annual meeting, American House, Boston, Nov. 18, 1933.

Fourteenth Exposition of Chemical Industries, Grand Central Palace, New York, Dec. 4 to 9, 1933.

Textile Division, American Society of Mechanical Engineers, annual meeting. Engineering Societies Bldg., New York, Dec. 6, 1933.

American Association of Textile Chemists & Colorists, annual meeting in conjunction with New York Section, New York, Dec. 8, 1933.

Silk Assn. of America, Annual Dinner, Waldorf-Astoria, New York, Jan. 18, 1934.

Second Knitwear Industrial Exposition, Grand Central Palace, New York, Feb. 12 to 16, 1934.

National Knitted Outerwear Association, annual meeting, New York, during week Feb. 12 to 16, 1934.

Knitting Arts Exhibition, Commercial Museum, Philadelphia, April 23 to 27, 1934.

National Cotton Week, May 14-19, 1934.

Southern Textile Exposition, Eleventh Annual Exhibit, Textile Hall, Greenville, S. C., Oct. 15 to 20, 1934.

NEW PUBLICATIONS

FUNDAMENTALS OF FIBER STRUCTURE; by W. T. Astbury; Oxford University Press, London; 8s. 6d.

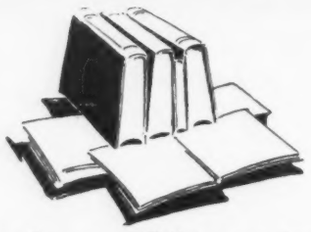
This book by a lecturer in textile physics at the University of Leeds adds to the fundamental knowledge of the constitution and structure of textile fibers through analyses made by the author with the help of the X-ray. It serves to explain the action of fibers under various conditions and may prove useful as the basis for more intelligent selection and processing of textile raw materials.

1933 A.S.T.M. MANUAL OF PRESENTATION OF DATA; American Society for Testing Materials, Philadelphia; 45 pages; 50c.

Carefully discussed are methods for condensing information contained in a set of observations and for presenting the essential information in a concise form more readily interpretable than the unorganized mass of original data. Methods of computation are included, and also a useful table of squares and square roots.

WOOL YEAR BOOK, 1933; Published by Textile Mercury, 41 Spring Gardens, Manchester, England. Price 7s.6d.

The 25th annual edition of this year book emphasizes the technical progress made recently in wool manufacturing and processing.



Business Literature

Yarn Twister. Whitin Machine Works, Whitinsville, Mass. Booklet describing attachment for twisting novelty yarns.

Feed Water Regulators. Northern Equipment Co., Erie, Pa. Illustrated catalog showing various types of feed water regulators and allied equipment.

Thermometer and Gauge. Brown Instrument Co., Philadelphia. Circular describing new recording thermometer and pressure gauge designed to withstand excessive overloads.

Plastic Products. General Electric Co., West Lynn, Mass. Catalog and price list of three types of plastic materials (Textolite laminated, Textolite molded, and Cetec cold molded) with brief description of different grades of each.

Stainless Steel. Ingersoll Steel & Disc Co., Chicago. Circular showing installation views of tanks and other equipment made of "Ing-O-clad" steel.

Pressure Instruments. The Foxboro Co., Foxboro, Mass. Catalog of recording gages, electric contact attachments, non-recording controllers, indicating gages and other pressure instruments.

Liquid Level Controllers. Kieley & Mueller, Inc., New York. Bulletin showing various types of liquid level controllers for applications in tanks, pipe lines, condensers, hot wells, open and closed feed water heaters and other vessels.

Pumps. Morris Machine Works, Baldwinsville, N. Y. Bulletin describing recent improvements and giving rating tables on various types of side suction pumps for handling clear water and abrasive or pulpy mixtures.

Humidity Instruments. Amthor Testing Instrument Co., Inc., Brooklyn, N. Y. Bulletin describing direct-reading precision hygrometers, recorders and other simple instruments for determining air conditions.

Motors. General Electric Co., Schenectady, N. Y. Illustrated circular on fractional-horsepower, single-phase, repulsion-start induction motors.

Water Treatment. D. W. Haering & Co., Chicago. Booklet describing the application of H-O-H treatments to various water problems and explaining the cause and effect of many problems common to boiler and hot water equipment.

Motors. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Leaflet describing the construction and application of Type FH resistance split-phase motors for driving oil burners, fans, blowers, pumps, etc.

Steel. Joseph T. Ryerson & Son, Inc., Chicago. New edition of book containing stock list and data on various kinds of steel, including special grades of cold finished steel, alloy steels, stainless steels, etc. (200 pages).

Pricing Policy. John R. Hall Corp., New York. Pamphlet contains article entitled "Economic Right Price" by Everett L. Woodworth, vice-president of this company. Described as an analysis of the problem of "unfair competition" in relation to NRA—and a proposed plan for assuring fair and constructive competition under the Act.

BUSINESS NEWS

Universal Winding Co., Boston, Mass., has transferred W. M. Mauldin, Southern agent, to the Charlotte (N. C.) office. Mr. Mauldin was for several years with J. E. Sirrine & Co., Greenville, S. C., industrial engineers, and later represented the Saco-Lowell Shops in the Southern territory and in China. Associated with Mr. Mauldin in the South for Universal Winding Co., are: Frederick Jackson and I. E. Wynne, selling agents, attached to the Charlotte office, and J. W. Stribling, selling agent, with headquarters in Atlanta, Ga.

Stuart F. Brown, treasurer, Whitinsville (Mass.) Spinning Ring Co., is visiting the plant of Eadie Bros. Ltd., at Paisley, Scotland, and the offices of the same company at Manchester, England. Eadie Bros., Ltd., own the patents under which Whitinsville Spinning Ring Co. are American licensees to manufacture the Eadie automatic oil-lubricated twister ring for cotton, silk and rayon.

Harry Duke has succeeded the late Lewis F. Allen as treasurer and general manager of the **Dinsmore Mfg. Co.,** Salem, Mass., sewing machines and supplies. Mr. Duke has been associated with the company for the last 25 years, acting as assistant manager and mechanical superintendent.

William A. Kingman, formerly chief chemist for Dennison Mfg. Co. and later chemist for Lowe Paper Co., has established headquarters at Framingham, Mass. He will act as a special sales representative for the **Glyco Products Co., Inc.,** servicing their special water-soluble waxes, resins, solvents, emulsifying agents, etc.

Thomas A. Marlowe, Inc., High Point, N. C., has been organized and will establish a plant for the manufacture of soaps, soluble oils and a line of finishing compounds for the textile industry. Operating the new company are Thomas A. Marlowe and J. W. Van Loan.

Berks Engineering Co., Reading, Pa., has recently taken over the sale, installation and service, for the State of Pennsylvania, of the H-W conditioner for conditioning silk on the cone and the Harris humidifier, both manufactured by **Industrial Dryer Corp.,** Stamford, Conn.

Willcox & Gibbs Sewing Machine Co. has appointed A. E. Sanborn to take charge of the Boston office, serving the New England States, effective at once.

Walter N. Cargill, Boston, who is sales agent for the Air Preheater Corp., has now been appointed by the Superheater Co., New York, as its sales agent in New England for stationary superheaters, economizers, furnace water walls and other Elesco steam plant equipment.

E. F. (Gene) LeNoir has recently been appointed representative for the Louis Allis Co., with headquarters at Allentown, Pa. He was formerly president of the Union Electric Mfg. Co.

H. Boker & Co., New York, has been appointed distributor for the following: stainless steel sheets by American Rolling Mill Co.; stainless steel rods, plates and strip by Simons Saw & Steel Co.; heat and corrosion resisting cast and fabricated alloys and special alloys by Michiana Products Corp.

Knitting Machine Importers Association is the name of a body just formed to further the interests of knitting machine importers and to cooperate with the National Recovery Administration. It is composed of the following concerns: Louis Hirsch Textile Machines, Inc., Emil O. Spindler, Grosser Knitting Machine Co., Robert Reiner, Inc., and Alfred Hofmann, Inc.

Torrington (Conn.) **Co.,** manufacturer of needles and related parts, has opened a new branch office in Greensboro, N. C., in the United Bank Building. It will be under the supervision of Henry D. Blake, Jr., assisted by Fred L. Rowe.

Carbide & Carbon Chemicals Corp. has received the first award sponsored by *Chemical & Metallurgical Engineering* for chemical engineering achievement to be given to a company rather than to an individual, according to announcement by Sidney D. Kirkpatrick, secretary of the award committee.

Duriron Co., Dayton, Ohio, has appointed D. Augsburger to managership of its Boston office to succeed E. D. Brauns, who has been transferred to the Philadelphia office, which he will head.

National Institute of Used Machinery & Equipment Dealers was formed at a meeting in Chicago on Oct. 21. Executive offices are in Pittsburgh and membership is open to dealers in used textile machinery. Officers elected are: M. D. Galbreath, president (Marr-Galbreath Co., Pittsburgh); S. A. deWitt, vice-president (DeWitt Tool Co., New York); C. L. McDonald, treasurer (McDonald Machinery Co., St. Louis).

Textile World Analyst

MARKETS RELATIVELY STEADY IN VIEW OF CONDITIONS

***Textile Mill Activity**—Textile mill activity, based on total consumption of raw material, was 36 1/2% greater during the first nine months of 1933 than during the corresponding period of last year. It was approximately 6% above that for the first nine months of the eight-year average, 1924-1931, which we have assumed as a normal period.*

ALTHOUGH the element of uncertainty was carried into October, textile markets were remarkably steady and buoyant in view of the conditions. General hesitation and recession which developed from the currency situation, plus the curtailing effect of labor unrest in certain branches of the textile industry itself, did not make a very promising background for the month. In spite of this, however, confidence seemed to be returning in the major textile markets and the worst of the hesitant period seemed to be over.

In the absence of statistics on October, it is impossible to say at this writing just what the trend of mill activity was, but the chances are that there was some slight recession from September. In view of the wide margin which the first nine months of this year hold over the same period of last year, however, it is certain that the total for the calendar year 1933 will be well above 1932.

One of the most encouraging phases of the improvement this year has been that affecting the wool industry. The decline in consumption of wool goods during recent years has been most discouraging; consequently it is particularly significant to note the statement of the Bureau of Agricultural Economics that consumption of wool by United States mills for the first eight months of this year was 50% larger than in the same period last year, and well above the 1924-1929 average. Equally interesting is the Bureau's statement that consumption during the last quarter of this year is expected to exceed that in the corresponding period of 1932.

The situation in the cotton division is, of course, well known, as it has been well publicized. The effect of the increased consumption is shown in the sharp reductions of stocks. The total stock of cotton in all hands in the United States on Sept. 30, including the estimated unpicked portion of the current crop, was 18,266,000 bales, compared with 20,333,000 on the corresponding date last year, and 21,321,000 two years ago, according to the New York Cotton Exchange Service. However, it is pointed out, although the end-September stock this year was 3,055,000 bales less than that of two years ago, it was much larger than the average stock at this time of the year. The end-September stock of 18,266,000 bales this year compares with 14,783,000 bales on the corresponding date in 1929; 14,823,000 in 1928; and 14,091,000 in 1927.

The silk industry, of course, has been retarded by the strike situation. The apparent clearing up of this trouble, at this writing, promises to be followed by a spirited revival of activity.

In manufacturing margins, it is interesting to note from Tables I and II that these slipped during October. The decline was not a very serious one, but at the end of the month margins were lower than at any time since the codes and processing taxes went into effect.

The raw cotton index of TEXTILE WORLD's price index numbers was practically unchanged from September to October, but the yarn and cloth figures moved downward, due to lower prices the last two weeks of October. The wool group average for the month continued its upward trend, although prices have been unchanged since the last week in September. The raw wool index is practically the same as it was in January, 1930, at which time tops stood at 160.5, yarn at 177 and cloth at 197. The raw silk index has been dropping since July.

TABLE I. CARDED FABRIC MARGIN

Date	Margin in cents	Date	Margin in cents
July, 1931.....	15.3	March, 1933...	10.2
October, 1931..	13.3	April, 1933.....	11.4
January, 1932..	12.1	May, 1933.....	15.6
June, 1932.....	9.5	June, 1933.....	20.6
July, 1932.....	9.1	July, 1933.....	23.4
August, 1932..	11.1	August, 1933...	21.4
September, 1932	13.0	September, 1933	19.5
October, 1932..	12.6	October, 1933...	19.1
November, 1932	10.7	Oct 4.....	19.6
December, 1932	10.6	Oct. 11.....	20.0
January, 1933..	10.4	Oct. 18.....	19.1
February, 1933.	10.1	Oct. 25.....	18.3
		Nov. 1.....	18.5

TABLE II. CARDED YARN MARGIN

Date	Margin in cents	Date	Margin in cents
July, 1931.....	12.6	March, 1933....	9.8
October, 1931..	12.7	April, 1933.....	10.1
January, 1932..	10.9	May, 1933.....	12.3
June, 1932.....	9.9	June, 1933.....	15.4
July, 1932.....	9.6	July, 1933.....	23.2
August, 1932...	9.7	August, 1933...	23.5
September,1932	12.8	September, 1933	21.3
October, 1932..	12.3	October, 1933...	20.0
November,1932	11.3	Oct. 4.....	21.1
December, 1932	10.9	Oct. 11.....	20.9
January, 1933..	10.2	Oct. 18.....	20.1
February, 1933.	9.4	Oct. 25.....	19.1
		Nov. 1.....	18.8

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Textile World's Price Index Numbers

Date	Cotton Index Numbers: Cotton	Yarns	Gray	Colored	Wool Index Numbers: Wool	Tops	Yarns	Cloth	Silk Index: Raw Silk
July 31, 1914..	100	100	100	100	100	100	100	100	100
1925..... ...	187	188	189	176	223	229	224	233	143
1926.....	140	155	157	149	184	189	179	207	136
1927.....	140	153	159	153	181	184	187	195	119
1928.....	160	162	162	166	199	202	199	197	110
1929.....	153	144	145	167	176	179	192	211	108
1930.....	108	125	123	144	127	139	161	202	
1931.....	68	93	92	119	99	112	134	161	
1932									
Jan.....	53	78	74	102	94	104	127	147	41
July.....	47	68	62	96	59	72	101	116	25
Oct.....	52	83	78	107	82	97	115	130	37
Dec.....	48	74	69	103	77	87	108	125	33
Jan. 1933.....	50	72	67	100	76	85	105	125	29
Feb. 1933.....	48	68	65	95	75	83	102	125	26
Mar. 1933.....	49	70	66	96	75	84	102	125	26
Apr. 1933.....	56	74	72	97	78	90	104	125	29
May 1933.....	69	93	94	101	104	113	116	169	34
June 1933.....	76	109	117	112	122	139	135	192	47
July 1933.....	86	138	135	131	134	153	156	201	50
Aug. 1933.....	110	170	151	147	136	157	159	217	41
Sept. 1933	111	156	149	147	144	177	165	222*	41
Oct. 1933.....	110	152	141	144	148	179	175	222	36

Note: All cotton indices since Aug. 1 include processing tax. * Revised

TEXTILE WORLD'S

Cotton Digest

ALTHOUGH we do not expect brilliant diplomacy from the harassed officials in the recovery program, we feel that Secretary of Agriculture Wallace could afford to think a little more carefully before he gives out a statement. As a case in point, take his remark that "in efforts to anticipate processing taxes so as to avoid payment while possible, mills in both flour and textile industries enormously increased their activity before wheat and cotton taxes and the increased wage costs under the NRA went into effect. Then, when the taxes and higher wages became effective, mills slowed down and in some instances blamed the processing taxes for inactivity really due to their efforts to beat the tax." That statement is not in line with the facts. George Sloan was quite right in calling the Secretary for it.

Cotton manufacturers would be justified in concluding that Mr. Wallace doesn't like them very much. Once more, we venture to suggest that the AAA take a leaf out of NRA's book; the cordial relationship between NRA and the textile industry has been one of the principal reasons for the successful operation of codes in this branch of manufacture.

It's the same bunch of men you have to deal with, Mr. Wallace.—*Editor.*

Nov. 1 Crop Forecast

The forecast released by the Government Nov. 8 as of Nov. 1 indicated a cotton crop of 13,100,000 bales, or 215,000 bales over the estimate as of Oct. 1. However, it was below most private estimates.

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Stock in Process Tax Stands

The Treasury Department, on Nov. 2, reversed its previous rulings and decreed that stock in process in mills on Aug. 1 would be subject to the floor tax, thus settling a point that has caused considerable controversy between mills and their customers. When the processing tax is removed stock in process will not be taxable.

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Spindle Activity Again Declines

The downward trend in cotton spinning activity continued during September, according to the monthly report of the Bureau of the Census, when operations were at the rate of 99.6% of single shift capacity, as compared with 106.7% for August, 117.5% for July, and 94.6% for September, 1932. There were 26,002,148 cotton spindles active during the month, an increase of 117,444 over the number reported for August. Cotton consumption for September was 499,486 running bales, as compared with 588,570 bales in August, and 492,742 bales for September, 1932. Cotton exports during September, amounting to 869,244 bales, was about 135,000 bales greater than last year.

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Tire Extension Ends

Effective Nov. 13, President Roosevelt terminated the stay of provisions of the cotton textile code whereby tire fabric manufacturers were permitted to operate three 40-hr. shifts per week. From that date these plants come under the two-shift limitation in common with other cotton mills.

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Compensatory Tax Hearing

A second hearing on the question of whether or not compensatory taxes should be levied against rayon, silk, wool and other fibers, convened in Washington Nov. 9. D. S. Murph, of the A.A.A., presided. Sydney P. Munroe, assistant to the president of the Cotton-Textile Institute, presented the cotton side of the case. He was supported by witnesses, among whom were Wilbur S. Lawson of Standard-Coosa-Thatcher Co.; R. G. Rankin, president of Southern Combed Yarn Spinners Association; and George H. Ellison, of Ewing-Thomas Corp. and Cannon Mills. Those who spoke on the other side were Rufus W. Scott of Tubize Chatillon Corp.; former Governor O. Max Gardner; James G. Hanes of Hanes Hosiery Mills; and Royal Little of National Rayon Yarn Processors Association.

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Yarn Selling Code

Meetings of carded cotton yarn distributors were scheduled in Philadelphia Nov. 13 and in Charlotte Nov. 14, for the purpose of considering additions to the cotton code which would govern yarn merchandising practices. When agreed to by the trade these provisions will be presented to the Code Authority.

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N. C. Manufacturers Meet at Pinehurst

The annual meeting of the North Carolina Cotton Manufacturers Association was scheduled to be held at the Carolina Hotel, Pinehurst, N. C., Nov. 16 and 17. Details will be given in our next issue.

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Settle Southern Strikes

Augusta, Ga., and the Horsecreek Valley, in South Carolina, were the storm centers of labor disturbances in October, but with members of the Cotton Textile National Industrial Relations Board acting as peacemakers, difficulties were adjusted. Workers went back to work Nov. 6. About 6,500 had been out in the two areas.

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Market Sentiment Better

November has opened up with better feeling in the cotton cloth markets than was current during parts of October. Efforts to buy print cloths on Nov. 9 at prices previously current for 1934 first quarter were not successful and mills were noticeably firmer. The election results in some centers and assurance of prohibition repeal improved sentiment, and the extraordinary fall of the dollar to $5.15 for the British pound suggested a form of inflation.

Coarse gray goods in October declined, 37-in. 48x48, 4-yd. sheeting dropping from 7⅜c. to 6⅞c., while 30-in. 40x28, 7-oz. osnaburg fell from 10⅛c. to 9¼c. On the other hand, 38½-in., 64x60 print cloths closed the month at 6⅝c., a decline of only ⅛c. from Oct. 1 quotations; 39-in., 80x80 print cloths dropped from 9¼c. to 9c.

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H. A. Florsheim Joins Hall-Kale Mfg. Co.

H. A. Florsheim, New York, for many years sales manager for the Gray-Separk group of mills and later with Textiles-Incorporated, has joined the Hall-Kale Mfg. Co., Troutman, N. C., manufacturers of 50s to 80s combed yarns, as general sales manager. It is anticipated that the sales of other units will be taken over from time to time.

Separk Forms Yarn Selling Concern

J. H. Separk, for many years secretary and treasurer of the Gray-Separk group of combed yarn mills, with headquarters in Gastonia, N. C., and more recently vice-president of Textiles-Incorporated, has organized the Separk Sales Co., with offices in New York, Philadelphia, Boston, Chattanooga and Gastonia. The new company was formed to maintain contacts with mills spinning carded and combed yarns, as well as spun rayon and fancy yarns of various descriptions, and will act as sales agents for all kinds of cotton and rayon yarns. Joseph Gray Separk will be associated with his father in the new company.

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Discuss Listing Print Cloths on Exchange

Consideration of plans for listing standard print cloths on the New York Cotton Exchange, in order to provide more favorable marketing conditions for such gray goods, held the attention of cotton mill executives in a meeting with S. T. Hubbard, Jr., former president of the exchange, at Greenville, S. C., Oct. 9.

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Cotton Mill News

Anniston (Ala.) Mfg. Co. has installed 29 Model X, new Draper looms and six new spinning frames.

American Net & Twine Co., Anniston, Ala., on Oct. 1 became the Blue Mountain unit of the Linen Thread Co., Inc.

Goodyear Tire & Rubber Co. has bought the 32,000-spindle tire fabric plant of **Connecticut Mills,** Decatur, Ala., for $251,000 at sale by bankruptcy court. The plant will be put into operation as soon as it can be reconditioned at an estimated cost of $100,000. Original investment in 1927 represented $1,250,000 in machinery and $600,000 in land.

American Mills Co., New Haven, Conn., has closed its branch plant at Waterbury, Conn.

Connecticut Cordage Co., Voluntown, Conn., has taken over the Elmville Mill property, Danielson, Conn., to occupy for new branch plant.

Eagle & Phenix Mills, Columbus, Ga., reported net profit of $43,021 for year ended Aug. 31, 1933, as compared with net profit of $26,472 for the previous fiscal year, before allowances for taxes.

Mary Delia Mfg. Co., Thomson, Ga., is the name of the new mill, formerly the Lullwater Milling Co. C. L. Upchurch, Athens, Ga., is the owner, and the mill has been named for his daughter. The company is capitalized at $150,000, with $75,000 paid in. New equipment is being installed and company will manufacture either warp or hosiery yarns. W. L. Phillips, formerly of J. W. Sanders Cotton Mills, Jackson, Miss., is the superintendent.

Maplewood Products Co., Fall River, Mass., formerly Estes Mills, manufacturing mops, twines and absorbent cotton, was sold on Nov. 7 with all its properties as a going concern to A. J. Feinberg, Boston, for $19,500. J. A. Lincoln of Boston is receiver.

Berkshire Fine Spinning Associates report a net profit of $97,591 for the fiscal year ended Sept. 30, 1933, against a loss of $1,353,139 for the preceding 12 months. Current assets total $6,686,509 against $3,345,642 current liabilities. Notes payable have been reduced to $1,789,355 from $2,320,000. Cash increased to $719,412 from $515,606. Inventories at $4,091,435 were only increased by 4%.

Hoosac Mills Corp., Taunton, New Bedford and Attleboro, Mass., has been placed in the hands of William M. Butler as temporary receiver. Operation will be continued. Assets were set at $7,500,000 and liabilities at $1,500,000. Receivership is to conserve assets of company which is one of the largest in the fine goods field.

Amoskeag Co., the holding company for Amoskeag Mfg. Co., reports net profit for the year ended June 30, 1933, of $524,887 compared with net profit of $667,594 for the 1932 fiscal year.

E. M. Holt Plaid Mills, Burlington, N. C., has installed several additional Sipp-Eastwood high speed overend redraw frames.

Rhodes-Rhyne Mfg. Co., Lincolnton, N. C., has completed addition and new machinery was installed Oct. 16. The annex is two-story, of brick. First floor was constructed for a finishing room, while looms have been installed on the second floor for weaving bedspreads.

Cascade Mills, Mooresville, N. C., have been purchased by J. Spencer Love and associates, Burlington, N. C. Looms in the plant will be operated, it is understood, while carding and spinning machinery will be removed to plants owned by R. L. Huffines and associates at Fayetteville and Clayton, N. C.

Cannon Mills Co., Kannapolis, N. C.; **Ware Shoals (S. C.) Mfg. Co.; Dwight Mfg. Co.,** Alabama City, Ala.; **Callaway Mills,** LaGrange, Ga.; **Exposition Cotton Mills,** Atlanta and **Manville-Jenckes Corp.,** High Shoals, N. C., have each installed Hygrolit yarn conditioning equipment.

Morgan Cotton Mills, Inc., Raeford, N. C., equipped with 10,000 spindles for coarse yarns, recently began operations after being idle for about three years.

Randtex Mills, Inc., with authorized capital of $100,000, has been organized by R. L. Huffines, Jr., McDonald Dixon and G. L. Pruden, operators of Claytex Mills, Inc., Clayton, N. C. The new company has acquired the No. 2 plant of **Deep River Mills,** Randleman, N. C., with 9,000 spindles and 275 looms, and will begin operations.

Appleton Co., Anderson, S. C., has awarded contract to the Webb Electric Co., of Anderson, for the complete electrification of its plant, at a cost of about $200,000. J. E. Sirrine & Co., Greenville, S. C., are the engineers in charge.

Equinox Mill, Anderson, S. C., will hold a special meeting of its stockholders, Nov. 20, to determine whether the company shall liquidate.

Isaqueena Mill, Central, S. C., is replacing certain obsolete equipment with modern machinery at a cost approaching $70,000, it is said.

Aragon-Baldwin Cotton Mills, Chester, S. C., directors have approved an offer for the Baldwin plant from Captain Elliott W. Springs, president, Springs Cotton Mills, Lancaster, S. C. The Baldwin plant, one of three mills operated by the Aragon-Baldwin Cotton Mills, is equipped with 31,488 spindles and 876 looms for the manufacture of sheetings. The offer will be submitted to stockholders at a meeting Nov. 16.

Irene Mills, Gaffney, S. C., together with its finishing plant have been sold to Frank M. Bennett, of New York, by H. C. Moore, receiver, who is operating them until final payment in 60 days.

London Mills, main plant at Sumter, S. C., manufacturers of cotton work clothes materials, was destroyed by fire late in September. The mill had 2,000 spindles and 131 looms.

Jackson Cotton Mills, Wellford, S. C., plant, has installed 55 Model E, Draper looms. The Iva (S. C.) plant of the same company has installed 95 of the same type loom.

Columbia Narrow Fabric Co., Shannock, R. I., has engaged H. H. Fales, Providence, R. I., engineer, to prepare plans for rebuilding power house, recently damaged by fire.

Kendall Co., Slatersville, R. I., has approved plans for construction of new one-story and basement addition, to be used as a finishing mill, 55x230 ft., estimated to cost over $50,000, with equipment. General contract was recently let to the O. D. Purington Co., Providence, R. I.

COTTON IN THIS ISSUE

	page
Code Administration Job Replaces Code Making...	57
New French Novelties Feature Metals and Lastex..	60
Linking the Budgets for Improved Control.....	62
Combed Group Discusses Preparatory Processes....	67
Experience as Guide to Warp Sizing Practice.....	72
D-13 on Twist-Definition Clarified.....	74
Loom Faults Met in Cotton Weaving Tests.....	76
Maintenance of Carding and Spinning.....	80
Picker-Lap Variation Reduced.....	81
One-Process Picker Change-Over Equipment.....102	

TEXTILE WORLD'S

Wool Digest

NO matter how much the reports of cancellations, current last month, were or were not exaggerated, they taught a double lesson: First, retail sales of clothing must be watched extremely carefully, as they represent the key to the future; there is no doubt, of course, that cutters bought fabrics to anticipate further price rise, and consequently volume of distribution is still an unknown factor. Second, the sooner a supplementary code of fair-practice provisions is put into effect by the wool industry, the better for all concerned. The difficulties in the way of getting approval of such a code from all factors involved is obvious, but the need is an urgent one.—*Editor.*

Philadelphia Assn. Hears Arthur Besse

Philadelphia Wool & Textle Association at its annual meeting in Philadelphia, Nov. 3, reelected Herbert K. Webb, president. The principal guest speaker at the luncheon was Arthur Besse, president of National Association of Wool Manufacturers. He stressed the fact that NRA success rested principally upon a real desire in industry to place itself on a better basis rather than upon enforcing power. He indicated that his association was opposed to the levying of a compensatory tax on wool goods as a competitor of cotton goods, as his belief was that wool did not so compete.

Other officers elected by the Philadelphia Wool & Textile Association follow: Vice presidents, James Bateman and Joseph S. Lord; secretary, Frank D. Levering; treasurer, J. Ellwood Moore.

Before the meeting closed John J. Smeallie, of Mohawk Carpet Mills, gave an illustrated lecture on the manufacture of rugs and carpets in his firm's plants.

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Spring Goods Orders in Readjustment

Readjustment of spring wool goods orders has lately been in progress, particularly in men's wear. In some cases where buyers had merely made "reservations" there were shifts to distribute the business more satisfactorily and to change relationships of various styles in the total.

Opinion is growing that spring will be a fancy goods season and buyers' recent activities have tended to confirm this. The use of fancies permits avoidance of too close competition and also attracts the consumer to new business after several seasons of staples and semi-staples.

It is understood that most of the stocks in hands of jobbers and clothiers at the present time is of the staple class. New impetus may be given the market as a whole by the advent of a real fancy season and the liquidation of current stocks should be only a temporary problem. Second hands generally have an eye to approaching year-end statements and they do not wish inventories to bulk too large. Some mills have cut from two-shift to one-shift operation.

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Second-Hand Selling of Fabrics

Overbought clothiers are said to be offering goods at 20c. per yard under mill prices, but there is little demand. Some buyers have asked deferred deliveries and mills are not forcing deliveries on such houses. The price level at the moment gives evidence of having outrun demand and some market students look for a gradual flattening off. Others describe the current situation as an exchange of cloth among overbought houses, but admit that the future is difficult to read.

Many fabric men see hope in the fact that there is a likely decrease in world wool supplies next season of perhaps 250,000,000 lb., chiefly in Australia and New Zealand. This would not affect the domestic situation except for the fact that wool importation was being resumed in September with interest in fine and medium crossbreds, especially of Montevideo types. Unless foreign markets rise considerably they offer a safety valve to the domestic, as our supply need be increased only when price is elevated to the necessary point. Below that point the domestic wool clip does not offer an excessive supply against average normal consumption.

•

Still at Work on Fair Practice Code

The wool goods industry was still at work early in November on its code of fair practices under its basic NRA code. Indications are that delays have been met in reconciling diverse points of view and if the industry is to wait for unanimity, considerably more time will be consumed. The industry's statistical work is going forward and it is hoped that data will be sufficiently clear to bring about prompt balancing of production to demand.

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Worsted Yarns Inactive

Worsted yarns were particularly dull in late October and held their position without much price change, thanks wholly to the strength in raw wool and tops. Spinners are hoping for revival in knitgoods demand in November, particularly in swim-suits, to give them added orders before those on the books come much nearer an end. Deliveries are moving in good quantity and booked orders are fair to the end of the year.

•

Tops Off From Peak

Wool tops on the futures exchange reached their highs for the current movement early in October. At that time the January contract was 108.2c. and March 109.0c. This was followed just after the middle of the month by recession to 98.0c. for each, but a firmer trend ensued and on Nov. 3 both months were at 100.5c. Boston spots held at 111.0c. for two weeks around the first of October, declining after the middle of the month to 109.5c., which was held through Nov. 3. Demand for both spot and future was light.

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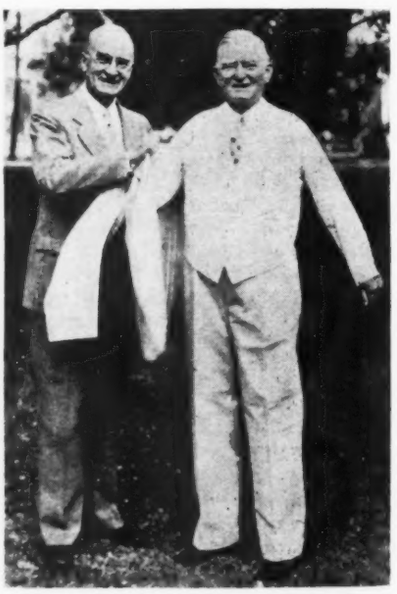
Wool Quiet at Top of its Rise

Raw wool has become inactive at the peak of the advance, which has been without recession since it began last March. The territory graded wool



International News Photos

Suit made of Texas wool and cotton woven by two students, being presented to Vice-Pres. Garner by Dr. Bradford Knapp, president of Texas Technological College, of Lubbock, Tex.

group, selling at an average of 38.9c. clean for the first quarter of the year, rose to 53c. in the second quarter, and to 72.3c. in the third quarter. October established a new high at 76.2c., but actual gain over September was only 1.6c.

Approximately 40%, or 4,000,000 lb., of the Texas fall clip will be Government consigned. This is considered a factor of great strength both for sellers and buyers. About one-half of the free wool has now been sold, leaving approximately 3,000,000 lb. The basic price is not fully established, but substantial sales have been made to mills at 74c. to 75c. Heavy shearing of fall sheep will result in a large clip of eight-months wool next spring and a relative decrease in the output of 12-months wool.

Mohair has moved briskly into the limelight after a long period of inactivity. Large Texas sales have been made to Boston houses at the highest prices for years, the adult hair ranging 40c. to 45c. and the kid around 58c. Interest in foreign-grown mohair is showing a sharp increase. During the last three years the amount of Turkey and Cape mohair in bond in Boston has rarely exceeded 250,000 lb., but during October 500,000 lb. or more was imported and other substantial quantities are en route. Cape firsts and Turkey fair average are both quoted in grease in bond at 18c. to 22c. The grease duty is approximately 26c. per pound.

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Woolen Rags Off in October

A strong bull market in woolen rags pushed soft woolens to 10½c. early in October and rough cloth to 2⅛c. After mid-month, prices receded to 8c. and 1¾c., respectively. Light hoods touched 17½c., but have since been offered near 15c. New clips eased in harmony, though not to the same extent.

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International Wool Group Meets

The International Wool Federation met in Budapest, Oct. 4 and 5. President Maurice Dubrulle of Roubaix, France, delivered the opening address, stressing particularly the "controlled" or "managed" methods of guiding a nation's industry, as has been current in Russia, Italy and Germany and now finds form in the United States in NRA. President Dubrulle warned against too high prices for wool as merely a means to encourage use of substitutes and waste. The meeting discussed European wool tariffs, the marking of goods, etc.

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Boston Wool Trade Meets Nov. 21

Annual meeting of the Boston Wool Trade Association is scheduled for Nov. 21. Robert L. Studley, of Studley & Emery, is chairman of the nominating committee which will present the slate for the new year at that meeting.

WOOL IN THIS ISSUE

	page
Code Administration Job Replaces Code Making	57
New French Novelties Feature Metals and Lastex	60
Coatings and Suitings—Design Suggestions	73
Processing Men's High-Grade Novelty Suitings	78
Systematic Worsted Doffing and Quality Checking	79
Wilton Analysis	98
Tape Condenser	100

Wool Mill News

E. P. Barber Mfg. Co., East Lyme, Conn., mill has been sold to Horace M. McCord of Boston, Mass. It is reported that the mill will no longer be used for textile manufacture.

Bridgton-Pondicherry Woolen Mills, Inc., Bridgton, Me., have started up the old Pondicherry Woolen Mill, as lessees. Plant was acquired by local interests through popular subscription last summer.

Kenwood Woolen Mills, Corinna, Me., have installed a complete water purifying plant, involving chemical treatment, filtration and Inversand softening, supplied by Hungerford & Terry, Inc.

Limerick (Me.) **Mills** bondholders committee bid $150,000 for the mills and acceptance has been recommended by Attorney Hiram Willard, of Sanford, receiver for the mills. The bondholders committee and Collins & Aikman, Philadelphia, were the only bidders at a receiver's sale. A new Company, **Limerick Yarn Mills,** has leased the mill, will operate it and may later purchase it.

Goodall Worsted Co., Sanford, Me., has revised plans under way for new Palm Beach clothing unit at Knoxville, Tenn., for which bids previously received were rejected. It will be one-story, 343x500 ft., reported to cost over $80,000, with equipment. It is understood that new bids will soon be asked on general contract. Bauman & Bauman, 813 Market St., Knoxville, are architects.

Worumbo Mfg. Co., Lisbon Falls, Me., reports net profit of about $32,000 in the first nine months of 1933. Report of the treasurer, Oliver Moses, showed that all bank loans had been paid. Quick assets amount to about $315,000 while current liabilities are about $81,000.

Germania Mills, Holyoke, Mass., will continue to operate its worsted spinning department but will close its woolen division.

Tiffany Woolen Mills, Webster, Mass., have been closed by their owner Lyman H. Tiffany and will be sold.

Bigelow-Sanford Carpet Co., New York, has declared a $4.50 dividend on preferred stock thereby wiping out all accumulations. The regular quarterly dividend of $1.50 was also declared and paid Nov. 1.

Collins & Aikman Corp. reports net profit for six months ended Aug. 26, 1933, of $634,227 against net loss of $437,981 for similar period in 1932.

Cleveland (Ohio) **Worsted Mills Co.** reports a net profit of $240,000 for the first eight months of 1933 against a net loss of $351,000 for the 12 months of 1932. Volume in the first eight months was said to be double that for the similar period of 1932.

Uxbridge (Mass.) **Worsted Co., Inc.,** is concluding negotiations for the purchase of woolen mill of Andrews Mills Co., Andrews Village, near Woonsocket, R. I., idle for about four years. The acquisition includes machinery now in the plant. New owner is said to be planning early operation for a branch mill, and will carry out an improvement program, with installation of additional equipment.

Lee Weaving Co., Petersburg, Va., operating 31 looms on men's wear worsteds, has been closed down by order of the parent company, L. Griffon Co., Baltimore.

J. Kelly DePriest, Bellingham, Wash., is secretary-treasurer of a new company organized for manufacturing Angora rabbit wool. Special machinery was purchased in Philadelphia, Pa., and Worcester, Mass.

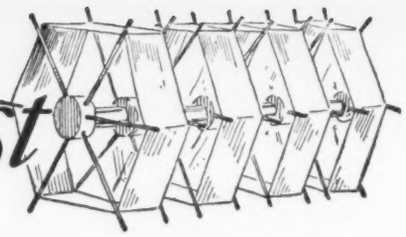
Appleton (Wis.) Woolen Mills are having plans completed by Orbison & Orbison, Appleton architects, for proposed new addition to mill on South Oneida St., and will soon proceed with superstructure by day labor. New unit will be four-story, 56x130 ft., and will be used in part for storage and distributing service, with lower floors equipped for mill expansion. It will cost over $50,000, with equipment. An additional $25,000 will be spent on the power plant.

Mohawk Mills, Ltd., Hamilton, Ont., Canada, will soon install additional spinning equipment for production of dry-spun yarns. This follows recent installations of additional worsted top-dyeing machines and yarn winding and reeling equipment.

Harry F. Brown has started woolen yarn production in a new mill at South Nelson, N. B., built for Mr. Brown, after he had purchased the old Flett Woolen Mill on the site and demolished the structure. The existing machinery, supplemented by some new equipment, is installed in the new building. Mr. Brown was foreman of the old plant. He plans to install weaving and dyeing machinery in 1934.

TEXTILE WORLD'S

Silk Digest



AS we write this, the acute phases of the labor disturbances in the silk industry seem to be passing. In our opinion, the National Labor Board handled an extremely difficult situation most capably.

However, no one familiar with this branch of textile manufacture will fool himself with the thought that a permanent solution has been reached. The basic trouble here is economic; too many silk manufacturing units are unsound in structure. Satisfactory labor conditions never accompany a condition of this sort.

We believe that this particular industry has a man-sized job ahead of it, first, in surveying and studying the causes for its troubles; and, second, in attempting to develop ways and means for their elimination. Many of the clauses in the silk code point toward that end; their early utilization and amplification in a broad house-cleaning program are necessary.—*Editor.*

Silk Strike Settled

On Nov. 2 the National Labor Board, after extended conferences with employers and employees, handed down the following ruling on the silk weavers' strike which had been in effect since Sept. 1:

1. The strike shall be called off and all strikers shall return to work without discrimination.
2. The weavers shall receive piece rates which will yield average wages of $25 for a week of 40 hours.
3. The rate of wages of other classes of workers shall be fairly adjusted to the wages of weavers.

Under the ruling, the NRA undertakes to protect manufacturers of New Jersey, Pennsylvania and New England against unfair competitive practices in other sections, and also against such unfair labor provisions as may prevail in competitive branches of the silk and rayon industries. Concerning NRA's part, Gen. Hugh Johnson made the following statement:

"The NRA has directed an expert technical survey to determine whether there is any definite part of rayon production that is so clearly to be classified with silk that in justice it should be included in the silk code. The NRA has also directed the immediate organization of the Silk Code Authority to the end that no improper classifications of wage differentials affecting weavers and other skilled workers is practiced, and that any unfair regional wage differences within the silk industry be corrected."

The strike was called to force action on the silk code and to secure higher wages, since the workers were dissatisfied with temporary operation under the cotton code. The silk code itself, signed on Oct. 7, contained the same wage provisions as the cotton code and workers still protested. The Labor Board decision offers a solution by setting wage levels for the skilled workers. The following factors made the situation difficult: rayon is woven in both cotton and silk mills; wages in silk mills average to be higher than in cotton mills, but certain rayon constructions formed a competitive bridge—both real and fancied—between the two. The Labor Board ruling is an attempt to make the bridge as narrow as possible by a factual survey designed to bring rayon weaving that is actually highly competitive with silk under the silk weaving wages; leaving non-competitive rayon weaving alone.

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Raw Silk Rebounds After Drop

November raw silk futures, after reaching a low of $1.42 the middle of October, rebounded the last week of the month and stood at $1.50 on Nov. 1. The early decline was attributed to the silk strike and news of increased supplies in Japan, while the rebound came about because of the imminence of strike settlement and further inflation talk. Warehouse stocks were 93,625 bales on Oct. 31, the largest on record, while October deliveries of 28,521 bales were the smallest since 1924.

During the month the Silk Exchange changed the multiple on futures to ½c. per pound, due to the lower prices prevailing today than when the 1c. multiple was put into effect. Another change was the statement on the part of silk dealers that only 3% interest would be allowed for anticipation on payments, as against the previous 6%; interest on past due accounts still being charged at 6%. The National Association of Hosiery Manufacturers immediately went into action and charged that the new ruling was entirely one-sided. Conferences are being held to work out an equitable plan.

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Promotional Campaign Hopeful But Indefinite

Two developments are of interest as bearing on the silk promotional campaign: first, the Japanese Central Raw Silk Association and the International Silk Guild (New York) have reached a basis of cooperation; and, second, Paolino Gerli, guiding genius of the Guild, and Julius M. Baer, general counsel of the Commodity Exchange, are attending the International Silk Conference in Paris, Nov. 14-15. It is understood that the subject of a campaign will have an important place in the conference and that the Silk Guild will direct any such campaign. There remain as hurdles the voting of the actual money by those organizations that have signified their willingness to contribute, and decision as to just what can and will be done; both a matter of months.

Paolino Gerli has been elected president of the International Silk Guild, Douglas Walker secretary and Alexander D. Walker treasurer.

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Goldsmith Temporarily Remains as Silk Head

James A. Goldsmith, who submitted his resignation as president of the Silk Association of America on Sept. 28, has signified his intention of remaining in office until the difficulties encountered in the operation of the silk code have been smoothed out. In submitting his resignation, Mr. Goldsmith intimated that he would remain until the association was reorganized, and later developments made it advisable to see the present difficulties through to their solution. Mr. Goldsmith has been elected chairman of general planning committee which will act as the code authority for the silk textile industry.

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Piece Goods Market Sluggish

Standard broadsilk constructions formed the bulk of what little trading there was in the early part of October, and a slipping price basis, brought about mainly by the decline in raws, did not help the situation any. Business continued sluggish through most of the month with fairly good sales of standard flat crepes the last week and a stiffening raw material market offering the only bright spots. Settlement of the dyers' strike, followed by the settlement

of the weavers' strike, brought new vigor to plans for the future, although a pessimistic note was sounded by some who feared a flood of goods that could not be absorbed at this time.

As is usually the case when the silk goods market is slow, synthetic fibers are accused of stealing the business, and gloomy statements about the future are heard. From the long-range point of view, however, it may be recalled that many have despaired of silks before, only to see a come-back. It would seem that a fair part of the popularity of synthetics at present is due to ingenious and beautiful weaves that hit style demand, quite outside of price considerations.

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Overlapping of Codes on Silk and Rayon

(*Continued from page 68*)

The problem of the manufacturer who must decide which code he comes under, and that of the labor unions faced with the wage question, parallel each other, to a certain point. In the negotiations looking to settlement of the silk-and-rayon fabric strike, representatives of the employees have contended that silk and rayon manufacture both require a higher skill than cotton fabric weaving, and therefore should have a higher minimum wage.

Union spokesmen for the striking operatives have asked $18 weekly minimum, as against $12-$13 minimum set in the code, and the manufacturers answer that competition compels them to duplicate the rates of the rayon branch. Rayon weavers, however, claim that silk wages have declined drastically in recent years and now parallel, when they are not below, rayon fabric levels. Rayon weavers also contend that continuity of employment gives their workers added advantage when wages are computed by the year, since shutdowns in silk mills are more frequent and therefore yearly earnings in the latter branch are less.

It is not the purpose of this article to consider the relative merits of the wage dispute, nor to pass judgment on the conflicting claims made by the different trade associations regarding their respective coverage of the silk and rayon branches of the weaving industry. The point at issue is the welfare of the silk and rayon weaving industry as a whole, and it is clear that this welfare is seriously prejudiced by the present lack of jurisdictional definition.

That trade leaders themselves are aware of the problem is indicated in the present groping toward a solution. Various plans have been proposed. These include: (a) An arbitrary division by fabrics, which would specify the quality and high-priced lines on one hand, and the low-priced, volume lines on the other, and (b) a wage scale based on specific jobs in the mill, similar to that now operating in the hosiery industry. Both suggestions have met with criticism, the chief objection being that neither plan is practical because too involved.

In any case, it would seem that percentage of yarn content could be a determining factor. Is there not a natural—even though approximate—division between the rayon fabrics that belong in the silk industry and those that belong in the cotton branch? Statistics of rayon yarn manufacturers show a strong trend among weavers toward finer deniers which immediately suggests that the synthetics are usurping silk more than they are usurping cotton.

Out of the whole confused picture one thought is clear, namely, that maximum efficiency under NRA will not be obtained by the weavers as a whole until jurisdictional divisions between the silk and rayon groups are more clearly defined. The existing conflict seriously handicaps the task of code enforcement; furthermore, if the principle of merging is sound in the case of individual mills, as all enlightened textile opinion concedes, is it not rather paradoxical to so split up an industry that a weaver is required to belong to several associations? An ideal solution, doubtless, is far off; but some early action to remedy the present situation is imperative.

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Silk Mill News

Bethel (Conn.) Silk Co. has decided to move its business to Pennsylvania due to a seven weeks' strike by employes. The company started operations in Bethel about 10 years ago and employs 100.

National Silk Co., South Coventry, Conn., is installing complete water filtration and Inversand softening plant made by Hungerford & Terry, Inc.

Belding Heminway Corticelli Co., Putnam, Conn., has awarded contract to the Tucker Construction Co., Inc., Providence, R. I., for a brick and steel addition to the boiler plant on Providence street. Files Engineering Co., Inc., Providence, are the engineers. The silk company reports net profit on its merged business for first nine months of 1933 of $377,208 compared with a loss of $233,044 for the similar period in 1932.

Wardi Silk Co., Inc., Union City, N. J., is reported to have acquired the plant formerly occupied by the Seidman Braid & Fabrics Corp., at Huntsville, Ala., and will transfer its equipment to the new location.

Hind & Harrison Plush Co., Clark Mills, N. Y., are installing zeolite water softening equipment by Hungerford & Terry, Inc.

Century Ribbon Mills, New York, reports for nine months ended Sept. 30, 1933, a net profit of $125,697 against a net profit of $10,014 for the similar period in 1932.

Southern Silk Mills, Inc., Kernersville, N. C., is planning an expansion program, including construction of one or more new mill units. Company has negotiations under way for acquisition of adjoining property for mill site. It is proposed to remove another plant to that location, concentrating production there.

Hillcrest Silk Mills property, High Point, N. C., has been acquired by the Carolina Cotton & Woolen Mills Co. for $70,000. The new ownership will begin at once to place the plant in shape for active operations. The mill has recently run its 300 looms on dress silks, rayons, wools and novelties.

Danville (Va.) **Silk Mills, Inc.,** is the new company, headed by J. Warshow, which will take over the operation of the Dan City Silk Mills.

Atlas Silk Mills of Virginia, Inc., recently organized to operate the plant formerly owned by the Martinsville (Va.) Silk Corp., has announced plans for an addition, 37 ft. x 200 ft.

British American Silk Mills, Ltd., Montreal, Que., have acquired the property of the defunct **Manhattan Mills,** Granby, Que. Building will be renovated and machinery from the Montreal location will be moved to Granby.

Associated Textiles of Canada, Ltd., Louiseville, Que., plan an addition to increase output of silk and rayon fabrics. Addition to the main mill building will measure 150x50 ft., two stories to house 100 looms and warping and slashing equipment. Erection of a dyehouse is also planned.

Newlands & Co., Ltd., Galt, Ont., are contemplating a new unit of three floors, 100x68 ft. Two floors will be used for silk throwing equipment and one for storing tops and worsted yarns. Additional throwing equipment may be purchased.

Narrow Fabrics Weaving & Dyeing, Ltd., Galt, Ont., has completed the addition on which construction began in September. It will be used as a weave-shed and new ribbon looms for weaving silk and rayon will be installed.

SILK IN THIS ISSUE

	page
Code Administration Job Replaces Code Making...	57
Silk Industry Code Approved	57
Throwing Industry Code	57
Overlapping Code Jurisdiction in Silk and Rayon...	59
New French Novelties Feature Metals and Lastex..	60
Throwing Silk and Rayon—Extracting and Dyeing.	68
Cloth Width and Take-Up	98
Cleaning Silk	99
Silk Conditioner	101

TEXTILE WORLD'S

Rayon Digest

REPORTS of progress presented at the first annual meeting of the National Rayon Weavers Association revealed what to us was a very impressive record for so young an organization. During the few months since its inception, it has developed a sound working basis, under NRA, for the particular group of rayon consumers comprised in its membership. As ex-Governor Gardner remarked, many an older and more experienced trade association has accomplished considerably less.

Among the future plans discussed at the meeting was the possibility of a reporting arrangement whereby knowledge of total actual orders placed by customers would be made available to members, the purpose being to check over-buying on the part of financially weak customers. If this plan can be developed equitably, it should have a most salutary effect.—*Editor.*

Yarn Production Holds Up

The slackened demand for rayon yarns, brought about by the strike of silk weaving mills in September and November, had little effect upon rayon and acetate production and shipments. Producers were behind in deliveries at the start of the period and most are still behind, the strike merely giving them an opportunity to catch up a bit on shipments to other branches of the textile industry. Pressure on deliveries is expected to last at least until the end of the year.

Books were opened for January delivery at unchanged prices, with producers inclined to caution customers not to rush in and buy heavily until they were sure just how business would develop. The fact that yarn is being sold into the first quarter of 1934 at unchanged prices strengthens the belief that producers are disposed to leave well enough alone. Price stability has been one of the contributing factors to the steady consumption of yarns and, while profit margins are relatively small, the volume of business done has been such that producers are pleased. With so many variable factors confronting the consumer, yarn price stability has been a great comfort and, barring unforeseen happenings, producers wish to continue this stability through the first quarter of 1934 at least.

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Fabric Market Moves Smoothly

Despite the difficulties presented by the weavers' and finishers' strikes in the silk-rayon branch of the industry, the rayon market during October demonstrated its soundness. In a few cases owners of gray goods who were rather short of cash, and who were unable to send the goods through the finishers and thus receive their money back in the usual manner, disposed of the fabrics at prices a shade below the market, but such developments failed to affect the general price structure. Volume of trading was, of course, limited by the strike and the usual seasonal lull between fall and spring seasons.

Acetate-rayon canton crepes showed particular strength and it becomes evident that their popularity will extend into 1934. Sand crepes have not been in spirited demand and the heavier crepes, not being suitable for the spring and summer seasons, have been dull. At the moment there is considerable attention being given to moss crepes.

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Protest Limitation of Tubular Knit Machines

A group of underwear manufacturers and knitters have protested inclusion of tubular rayon knitting concerns in the underwear code and limitation of machine hours to 80 per week. On Oct. 21, President Roosevelt granted a stay in the application of the code pending investigation. The underwear manufacturers and knitters in question state: (1) that 80% of the rayon knit underwear is made by concerns that do not do their own knitting; (2) the 80-hour limitation places no hardship on concerns that knit and fabricate the remaining 20%; (3) if the independent knitters are limited to 80 hours per week the independent fabricators will not be able to secure enough tubular rayon knit cloth to conduct their normal business. Among the knitting concerns that joined with underwear fabricators in the protest were the Industrial Rayon Corp., the Tubize-Chatillon Corp., and the Arcadia Knitting Mills.

Scheuer & Co. Open Uptown Branch

In order to render better service to uptown clients, Scheuer & Co., 72 Leonard St., N. Y., textile brokers and consultants, have opened a branch at 1450 Broadway to handle the silk and synthetic fabric department of the concern. Cotton and cotton mixture fabrics will continue to be handled from the downtown office where the designing department and laboratory will also remain. The new branch will be managed by Arthur Cohen and S. Mortimer Bloom.

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Rayon Exports Show Gain

Total exports of rayon merchandise in August were valued at $264,456, according to the Bureau of Foreign and Domestic Commerce. This compares with an average of $212,489 per month for the first six months of this year. Yarn exports for August totaled 71,510 lb. and the total for the year through that month was 749,546 lb., as compared with 690,000 lb. for the entire year 1932. Total value for all products during the first eight months of this year was $1,795,769.

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British Celanese Nets Profit

Net profit of £612,824 (about $2,929,298 at current exchange rate) for the year ended June 31, 1933, is reported by British Celanese, Ltd., before interest and expenses of research and advertising. This compares with £499,718 the previous year. No depreciation was taken in either year and no announcement made with reference to dividends in arrears on preferred stock.

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Macy's Features Rayon Damask

Macy's, New York, has been featuring rayon damask dinner sets in its advertising. Of interest as an indication of rayon's present position among the elite is the lead which says, "For Formal Entertaining," and the text of the advertisement which continues, "It should be used for formal parties because it is really too grand and elegant for corned beef and cabbage." Luncheon and dinner sets are in ivory and peach.

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New Yarn Firm Formed

A new firm to deal in natural and converted rayon yarns has been formed by Gerson Robison and Ralph Taylor under the name of Taylor-Robison &

Co., with offices at 1450 Broadway New York. Both Mr. Robison and Mr. Taylor have been in the rayon trade for many years and it is planned to expand the business as conducted by the former R. W. Taylor, Inc.

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Fabric Exhibits

Among the more interesting fabrics recently displayed at the Du Pont exhibit in Atlantic City were fur effects manufactured by E. F. Timme & Co., and "Kaskade," a showerproof velvet made by Wm. Openhym & Sons. Another feature was the display of Acele fabrics on miniature carved mannequins.

McCreery's, of New York, held a special exhibit of Celanese draperies in late October. In addition to the staple moires, taffetas and ninons, jacquard moires, embroidered moires, novelty ninons and Crepe Ondese (a rough crepe) were shown.

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Further Data on French Winter Showings

Rayon velvets, crepes and satins form the basis for the winter collection of Coudurier, Fructus & Descher, according to reports from Paris office of Du Pont Style Service. Novelty weaves in velvets, based on last season's successes, are being shown. These off-shoots include developments of Velours Paysan in popular rib surface, chevrons, broken rods and diagonals. A most popular weave is Rayon Satin Paysan, a faconne fabric with quilted effect. This is extremely original and has already met with enormous success in the Haute Couture.

Extreme variety is the keynote of the Riqueur winter fabric collection. With hardly an exception, rayon is the basis of each fabric shown. Although the main weaves are velvets and otomans, many novelty types are also included.

Among the new velvets at this house are Sergeline, a rayon velvet with dull and shiny diagonal surface. Piqueur is a new corduroy, as is Grand Veneur, which has two colored ribs. Equipage is a novelty velvet with rayon bouclettes, while Grand Equipage is a heavier version of the same weave, for coats.

Blum Freres have devoted the most important part of their collection to velvets and plushes. The latter, mostly in rayon, have been designed to give plisses or fringe effects. Some, as the "Hermine Ottomane," are ribbed imitation fur. Fleur de Cygne and Frasquita are two novel plushes extremely supple, which are the success of the collection.

One of the most original collections of the winter season is found at Carlin & Cie. Here rayon is used almost exclusively for a widely varied velvet group. Carlin has designed rayon velvets with novel pile effects, with chiselled or curled surfaces, such as Velride. Zebrajour is a new dull and bright ribbed rayon velvet. Velajour is a rayon velvet with squares in relief. Velasilo has fine stripes.

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Rayon Mill News

Celanese Corp. of America, Cumberland, Md., is having a large new Inversand water softening plant erected in Cumberland, by Hungerford & Terry, Inc.

Rayon Weavers, Inc., New Bedford, Mass., has taken over portion of former mill No. 1 of local Fairhaven Mills, Sawyer St., totaling about 35,000 sq.ft. of floor space, and will occupy at once for new plant. Employment will be given to 50 persons at the start.

American Rayon Co., Inc., East Riverton, N. J., has been organized with capital of 100 shares of stock, no par value, by William H. Furness, Reed St. and River Rd., East Riverton, formerly head of the Furness Corp., Gloucester City, N. J., now in receivership. Mr. Furness recently resigned as one of the receivers for last noted company. New organization plans to establish a rayon mill at East Riverton, scheduled to be ready for operation early in the coming year.

Carolina Cotton & Woolen Mills Co., Spray, N. C., recently acquired the plant of the Hillcrest Silk Mills, High Point, N. C., equipped with 306 looms, and will operate the mill on rayon dress fabrics, selling the output through Marshall Field & Co.

National Weaving Co., Lowell, N. C., has awarded contract to M. R. Ritch of Charlotte, N. C., for construction of an office building which will cost approximately $7,000. George N. Rhodes of Charlotte is architect.

American Enka Corp., Enka, N. C., proposes to enlarge the plant at a cost estimated at about $1,000,000. The extension should be ready by March, 1934. The work will be done entirely by the Enka company's own staff. About 75,000 sq.ft. floor space will be added to the main building (already comprising 1,000,000 sq.ft.), an addition will be made to the powerhouse and a new 800-hp. boiler installed.

Duke Mfg. Co., a new rayon fabric manufacturing company, Mt. Airy, N. C., will move into the building on Willow street, occupied by the Surry Knitting Co., when the latter company moves into its new quarters in the brick building opposite to the Mount Airy Knitting Co., which operates Surry as a subsidiary.

Industrial Rayon Corp. reports for the first nine months of this year a net profit of $1,258,033 comparing with a net loss of $210,928 for similar period in 1932.

Lexington (N. C.) Silk Mills, Inc., operated by Burlington (N. C.) interests headed by J. Spencer Love, are planning erection of an additional building which will be used for processes preparatory to weaving. Additional looms will be placed in the space made available in the present building and about 100 additional employes added to the present force of 200 persons.

John N. Stearns & Co.'s plants at Williamsport, Pa., and Elmira, N. Y., have been sold to J. S. Andrews, attorney. It is understod that his principal is a large producer of synthetic fiber. The Stearns firm was in receivership.

Mid-State Cloth Mills, Newton, N. C., has installed a Johnson five-cylinder rayon slasher. This machine is arranged for handling rayon on the cotton system.

Courtaulds (Canada), Ltd., Cornwall, Ont., has awarded general contract to the Foundation Co. of Canada, Ltd., Toronto, Ont., for construction of unit No. 3, a two-story building, 150x500 ft., estimated to cost $2,500,000, with equipment. It will house 32 machines, bringing the plant total to 118. New unit will be equipped to give employment to about 400 additional persons and is scheduled to be ready for service early next spring. This new unit will produce about 3,000,000 lb. of yarn annually.

Canadian Celanese Ltd., Drummondville, Que., is installing a number of looms to take care of a wider range of fabrics. The company has orders for several months ahead and hopes to have 1,000 looms in operation by the end of the year. At a general stockholders' meeting in Montreal, Canadian Celanese ratified the proposal of the directors to abandon the plan for refunding dividend arrears on preferred stock by payment of $1.62 in cash plus one-half share of common stock.

RAYON IN THIS ISSUE

	page
Code Administration Job Replaces Code Making	57
Throwing Industry Code Approved	57
Overlapping Code Jurisdiction in Silk and Rayon	59
New French Novelties Feature Metals and Lastex	60
Throwing Silk and Rayon—Extracting and Dyeing	68
Simple Rayon Tests Aid Weaver and Knitter	70
Rayon Weavers Hold First Annual Meeting	75
Cloth Width and Take-Up	98

TEXTILE WORLD'S

Knit Goods Digest

THE results of the first meeting of the Hosiery Code Authority, held last month, demonstrated that this industry has both the inclination and the ability to avail itself of the opportunities for self-government offered by the NRA. The Authority perfected its organization, developed an official set of rulings and interpretations of the code, agreed upon a form for the poster which is to be placed in mills to acquaint the workers with those provisions of the code which affect them; and disposed of a number of other questions.

Particularly welcome was the news that the Fair Trade Practice Committee, holding a special meeting at the same time, developed a tentative form of standard conditions of sale, to be submitted later to the Authority for approval.

Activities to date promise that the interests of hosiery manufacturers will be well served by their representative body.

—*Editor.*

Seamless Hosiery Call Reaches "Boom" Status

One of the striking effects of higher raw silk prices and increased labor costs in the hosiery market has been the decisive stimulus given to seamless silk hosiery. This branch of the hosiery industry, which had been competitive to the point of being virtually profitless in recent years, is now enjoying a rejuvenation period. Higher prices of full-fashioned stockings took most of these lines out of the bargain basement 50c. range, leaving that field very largely to seamless.

The call for seamless increased steadily through late summer and early fall, and at the end of October leading mills were so heavily oversold that a number of them refused to take further orders for any date. Inquiry in Worth Street disclosed that practically all mills were sold to capacity to the end of the year. Retail stocks of seamless are moving rapidly and distributors who failed to cover ahead now are having difficulty in getting stocks.

Knitters are guarded with respect to predictions on the permanence of the seamless boom, but the general feeling is that seamless will continue moving at its present rate for some months. Interest seems to center on hosiery selling in the $3.50 range. Among the most popular seamless numbers are 260-needle at $3.00 and 300-needle which brings up to $4.00 per doz.

Some of the keener manufacturers talk warningly about the danger of placing too much confidence on the new boom. They point out that, while present demand is unquestionably in excess of seamless mill capacity, the duration of the call will depend largely on the fashion element.

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Southern Hosiery Association Formed

Southern hosiery manufacturers organized an association at a meeting of 67 executives held in Asheville, N. C., Nov. 3 and named an executive committee to complete details. Harold Lamb, of Union Point, Ga., was elected temporary president and P. W. Eshelmann, of North Wilkesboro, N. C., temporary secretary. John M. Berry of Rome, Ga., was named chairman of an executive committee whose identity will not be made known until their appointments are accepted.

The name of the association will be selected by the executive committee, as will the city in which headquarters are to be established. Asheville may become the headquarters city, Mr. Berry indicated. The initial southern association of hosiery manufacturers was absorbed in 1910 by the National Association of Hosiery Manufacturers.

•

Dates Set for Knitting Exhibition

The week of April 23, 1934, has been set as the date of the 30th Knitting Arts Exhibition, which will be held as usual in the Commercial Museum, Philadelphia, according to the National Association of Hosiery Manufacturers. Plans are being made for better arrangement of booths by the exhibit committee. Albert C. Rau, of the Chester I. Campbell organization, will again act as manager.

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Planning Second Knitwear Exposition

The Second Knitwear Industrial Exposition will be held in Grand Central Palace, New York, Feb. 12 to 16, 1934, according to A. B. Coffman, manager. He expressed belief that at least twice as much floor space will be occupied by exhibits as in the first exposition. The show is again being held under the auspices of the National Knitted Outerwear Association, and its annual convention will be held in New York at the same time.

•

Footer Question on Way to Solution

The provision of the code dealing with limitation of hours of operation of footers has caused more controversy than any other point, but now seems on its way to solution. Briefly stated, the article in question states that mills operating two shifts in July can continue to operate two shifts, but each shift must not exceed 35 hours (pay to be same as for 40 hours). Mills operating one shift in July continue on a single shift basis of 40 hours.

A West-Coast Knitting Merger — Below: the new $300,000 plant of West-Coast Manchester Mills, Inc., Los Angeles, Calif. The former West-Coast Knitting Mills was established in 1917. The former Manchester Knitting Mills began with one hand knitter in building shown in inset in 1918. Sweaters and swimsuits are manufactured.

The nub of the controversy is that a number of mills are so balanced that footers have normally run only one shift, while another group of mills are geared to run footers the same length of time as leggers, i.e., two shift operation of footers is normal for them. The latter group claim that if they are restricted to 70 hours on footers they must also reduce leggers to 70 hours and be thus placed at a disadvantage when competing with the first group that is geared to run leggers 80 hours under the code.

Stanton D. Sanson, president of the Ajax Hosiery Co., Phoenixville, Pa., presented facts and figures to Deputy Administrator Rogers and, as a result, Dr. Rogers appointed Mr. Sanson as a member of the Hosiery Code Authority for a period of 60 days as a representative of his group.

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Hosiery Prices Weaken

Full-fashioned hosiery is not moving through wholesale and retail channels in a manner that can be called encouraging and prices are not any too strong at present levels. The course of the market can be judged by the fact that $7.25 per dozen was mentioned as the price for 4-thread, 42 gauge around the first of September, a price of $7 prevailed in early October and $6.50 is now named as the market. In this connection, however, it is well to recall that raw silk prices have declined approximately 25c per pound during the last two months.

Demand for men's half hose has been dull and prices have slumped 10-15% below September levels. Low-priced lines of women's seamless have declined almost 20%.

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Swim Suit Openings

Bathing suit producers selling to the wholesale trade decided at a meeting held on Oct. 24, under the auspices of the National Knitted Outerwear Association, that Nov. 13 be set as the date for the official opening of all fall lines. Another significant step taken was to shift the seasonal openings to New York from Chicago where they have previously been held.

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Wins Patent Decision

A decision in favor of the Textile Machine Works has been handed down by Judge J. B. Avis of the U. S. District Court in Camden, N. J., in the suit of that company against Alfred Hofmann, Inc., for infringement of the R. E. Schletter patent, No. 1,713,628. The patent covers a control for certain carrier rods. The Hofmann company announces that it will appeal the decision and states that its present pointed-heel attachment can in no way be construed as within the scope of the patent.

KNIT GOODS IN THIS ISSUE

	page
Code Administration Job Replaces Code Making	57
Full-Fashioned Selvages	66
Half-Hose and Effect of Twist in Yarn	81
Careful Manipulation in Finishing Glove Silk	83
Hosiery Needle Breakage	98
Hosiery Narrowing Layout	99
Defect in High Splicing	99
Continuous Processing of Tubular Knit Goods	100
Ringless Hosiery	100
Full-Fashioned Machine	100
Knit Goods Steamer and Tenter	101

Dull Underwear Market

Warm weather has slowed heavy weight underwear in wholesale and retail channels and given mills a chance to catch up on deliveries, but new orders are few and far between. With wholesalers and retailers concentrating their efforts on the disposal of heavyweight lines, interest in spring lines has lessened the last few weeks. A fairly good volume of business was booked the early part of October, however. The price situation at the moment is described as reasonably firm and considerably better than in previous seasons.

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Knitting Mill News

Harvey Textile Co., Shelton, Conn., has acquired the **Shelton Knitting Co.'s** property and started operations in the new unit about Nov. 5

Rollins Hosiery Mills, Des Moines, Ia., has lately added machinery at its Boone (Ia.) plant.

Harrison Knitting Co., Boston, Mass., has been organized with a capital of $25,000, to operate a knitting mill. Bernard Wall is president; Arthur Wall, Brookline, Mass., is treasurer and representative.

Parfait Mfg. Co., Inc., Union City, N. J., has been organized with capital of 1,000 shares of stock, no par value, to operate a local knitting mill. New company is headed by Charles W. Kappes, 708 Bergenline Ave., Union City.

D. B. McCrary, head of the **McCrary Hosiery Mills, Inc.,** and the **Parks Hosiery Mills, Inc.,** Asheboro, N. C., and associates have taken over the former Keystone mill on Hawkins St., and will occupy for a knitting mill. McLaurin Cranford, Asheboro, will be active in the new project. It is understood that the operating company will be organized under the name of the **Laurin Hosiery Mill.**

Hatch Full-Fashioned Hosiery Mills, Belmont, N. C., has installed four additional full-fashioned hosiery machines, which brings the total number up to 21. An addition, recently constructed, will house 15 machines.

May Hosiery Mills, Inc., Burlington, N. C., reported net income of $178,840, for the year ended Aug. 31, 1933, as compared with $73,962 for preceding year.

Avalon Full-Fashioned Mill of **Elizabeth City (N. C.) Hosiery Co.,** has installed the first two of the seven leggers which, with three footers, will constitute the 10 knitting machines to be added to the equipment of the mill.

Plymouth Hosiery Mills, Inc., High Point, N. C., recently organized with capital of $100,000, plans early operation of local knitting mill. W. S. Swain and W. A. Davis, both High Point, head new company.

Mount Airy (N. C.) **Knitting Co.** will shortly move its subsidiary, Surry Knitting Co., into a 5-story building on Willow St. lately acquired.

Renfro Hosiery Mills, Mount Airy, N. C., recently completed the installation of a finishing unit which will not only handle the output of the company's knitting mill but will also finish gray hosiery purchased from other knitters.

Kissinger Knitting Mill, Lykens, Pa., is removing its plant to mill property on Market St., Millersburg, Pa.

Lucky Stripe Silk Stocking Co., A. H. Hirsch, president, has purchased the **Walbridge Hosiery Mills,** North Philadelphia.

Lehigh Silk Hosiery Mills, Philadelphia, in final sale by receiver disposed of trade marks, patents, brands, boxes and labels to Leon Worms, New York, for $2,075.

A. A. Sanderson, Philadelphia, has bought the former **Becker Ingrain Hosiery Mills,** Fort Atkinson, Wis., and plans to start operations.

Franklin Hosiery Mills are now located at Park Ave. and Rose St., Williamsport, Pa., having moved from Philadelphia.

Jac Feinberg Hosiery Mills, Rock Hill, S. C., has completed its second addition in which eight more machines were installed. There are now 22 full-fashioned machines in operation in this plant.

Appalachian Mills Co., Knoxville, Tenn., is installing a new 400-horsepower boiler.

Lynchburg (Va.) **Hosiery Mills, Inc.,** are planning to enlarge their facilities by building an adidtion to the Fort avenue plant.

TEXTILE WORLD'S

Processing Digest

IN recent years the finishing industry has made remarkable progress in the betterment of textiles employed in the manufacture of wearing apparel and household furnishings. On the other hand, with a few notable exceptions, processors of yarns and fabrics have given little thought to the improvement of textiles for industrial use. In the industrial field, textiles are in direct competition with leather, rubber, wood, sheet metal, wire screening, and a host of other materials; and in this field there is no prejudice in favor of textiles over these other materials.

For the most part, no attempt has been made to fit the textile to its use; and as a result, industrial consumers have been forced to take what they could get. What improvements have been made have resulted largely from the efforts of the user. An example of this is the purification of textiles for electrical insulation, results of which are discussed elsewhere in this issue. To insure the continued use of textiles in their present industrial applications and to develop new applications, textile finishers must determine what properties are desirable and necessary in yarns and fabrics for various industrial purposes and then endeavor to produce products more in accord with those requirements.

Editor.

Dyers' Strike Ends

The silk dyers' and printers' strike, which affected some 15,000 workers and 97 plants in Paterson and vicinity, ended on Oct. 24 with the acceptance by the Institute of Dyers & Printers, the Independent Dyers & Printers' Association, and Local 1733 of the United Textile Workers of America of an agreement providing for minimum wages of $23 a week for male employees and $16 a week for female employees, a maximum work week of 40 hr. and recognition of the unions affiliated with the American Federation of Labor. The agreement is to be effective for one year.

The strike began on Sept. 5, when the radical National Textile Union called out the workers at the Weidman plant of the United Piece Dye Works. On Sept. 8, eighteen dyehouses with 6,000 workers were at a standstill as a result of activities of the left-wing union. Meantime the United Textile Workers' Union, dyers' affiliate of the American Federation of Labor, had entered the picture; and John Moffitt, conciliator of the U.S. Department of Labor, conferred with representatives of the Institute of Dyers & Printers and stated that he would deal only with this union. With the industry virtually at a standstill, both in Paterson and New York, the United Textile Workers, on Sept. 12, filed demands of $18 a week for unskilled and $44 a week for skilled workers on a 30-hr. week. A counter-proposal by the Institute of Dyers & Printers, made public on Oct. 15, was the basis on which the strike-settlement agreement was reached on Oct. 24. Termination of the strike is regarded as a tribute to efforts of Conciliator Moffitt; satisfactory to members of the Institute of Dyers & Printers and United Textile Workers; defeat for the left-wing National Textile Union, which instituted the strike, but was largely ignored during attempts at settlement; and certain to increase costs and necessitate higher prices for dyeing and printing.

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Laundry-Tested Label for Wash Fabrics

Labels for identifying wash fabrics which have passed shrinkage and fastness tests carried out by the Laundryowners National Association are now being employed by Robert McBratney & Co., Inc., and Turner Halsey Co., and their use will be extended to other producers of washable materials after suitable testing arrangements have been made. Sample swatches of each lot of material as it goes through the converter's plant will be sent to the laboratory of the Laundryowners Association. These lots will be tested for shrinkage under actual laundry conditions (and for fastness to sunlight and washing where colored). All cases of excessive shrinkage or fading will be reported by wire to the converter. A further check to assure impartiality in the Institute's findings will be made on finished garments. Fifteen or twenty laundryowners in different parts of the country will each month purchase at retail, and at the converter's expense, stock garments from fabrics carrying the approval seal. These will be sent to the Institute for thorough tests as to shrinkage, color fastness, and wearability. They must measure up to fixed quality standards in order for the converter to continue to enjoy the use of the "Laundry-tested" label. For an experimental period, it is planned to limit the tests to licensees of the Sanforized-shrunk process, controlled by the Sanforizing Division of Cluett, Peabody & Co.

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A.A.T.C.C. Notes

A meeting of the Piedmont Section, American Association of Textile Chemists & Colorists, was held in Charlotte, N. C., Oct. 21. George S. Harris, treasurer, Spring Cotton Mills, Lancaster, S. C., discussed various aspects of the NRA program with specific reference to the textile industry. R. H. Nuttall, superintendent of printing, Pacific Mills, Lyman, S. C., described the expansion and improvement of textile printing operations in Brazil, and showed samples of fabrics dyed and printed in that country. George P. Feindel, of Union Bleachery, Greenville, S. C., was elected chairman of the section. Other officers named at this time were: Professor A. H. Grimshaw, of North Carolina State College, Raleigh, N. C., vice-chairman; Fred O. Tilson, Charlotte, N. C., treasurer; and John C. Robertson, Greenville, S. C., secretary.

William H. Thompson, who for many years was associated with the American Printing Co., spoke on the "Growth of Art and Its Application to Textile," at a meeting of the Rhode Island Section, held in Providence, on Oct. 27.

The fall meeting of the Southeastern Section was held in Columbus, Ga., Oct. 28. Prof. Charles B. Ordway, of Alabama Polytechnic Institute, gave a talk on "Personal Glimpses of the Annual Meeting in Chicago"; Robert D. Sloan, of E. I. du Pont de Nemours & Co., Inc., discussed the "Application of Fatty Alcohols to Dyehouse Troubles"; and Harold Schroeder, of Dixie Mercerizing Co., spoke on the "Dyer as a Chemical Pioneer."

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Finishing Activity

Finishing activity gaged by orders received gained from 41% white and dyed combined in August to 44% in September, according to figures released by the National Association of Finishers of Textile Fabrics. Orders for prints were 52% of capacity in September against 53% in August; fast black 22% in each month; logwood and sulphur black 46% in September and 55% in August.

By-Products from Wool Scouring Liquors

Recovery of valuable by-products from wool-scouring effluent was described by Richard J. Smith, at a meeting of the Society of Dyers & Colourists, held in Manchester, England. In the method discussed by Mr. Smith wool wash-liquor is passed first through tanks in which the heavy suspended solids are deposited and is then pumped through a mixing jet and at the same time brought into contact with compressed air. The issuing liquor is impinged upon an abutment, whereby coagulation of the fat is effected and a foam rich in lanoline is produced. The foam is washed with water to reduce the amount of occluded soaps and is then passed to a continuous autoclave, in which it is subjected to heat and pressure until the water content is reduced below 2%.

The crude wool wax produced by this treatment contains a high proportion of fatty alcohols, and by a process of high vacuum distillation, a range of interesting and valuable products is obtained. These include high-grade fatty acids with an unsaponifiable content of less than 1%, with titres up to 70° C., and of good color; distillates rich in cholesterol and similar alcohols, and commercial quantities of fractions ranging from semi-solid distillates containing alcohols of approxmately C 12 to hard crystalline products containing alcohols up to C 27. These products are finding use in producing emulsions of many types, and during the past two years mineral-oil emulsions stabilized by the use of these alcohols, have been placed on the market. Other products are emulsified wool-creams, and readily emulsifiable mineral oils. The pitch remaining in the stills after producing these products has valuable anti-acid properties and lends itself to the manufacture of anti-corrosive paints. It also has emulsifying properties, which make it particularly useful in the manufacture of bitumen emulsions for dressing road surfaces.

•

New Dyestuffs

E. I. du Pont de Nemours & Co., Inc., announce the following new product:

Leucosol Yellow K paste, a vat color of the anthraquinone series prepared particularly for the printing trade; this is a non-drying paste, and is said to be grit-free, non-foaming, and sufficiently fast to light, soaping, and commercial laundering to be applicable to cotton, silk, or rayon which is to be used for dress goods, draperies, and similar materials.

General Dyestuff Corp. announces the following new products:

Celliton Fast Navy Blue GTN powder, a dyestuff for cellulose acetate giving a somewhat clearer and greener shade than the GT brand, and surpassing it in fastness to light and affinity for the fiber.

Celliton Yellow 3GN powder, a dyestuff suitable for dyeing cellulose acetate and giving bright, greenish yellow shades somewhat greener and brighter than Celliton Yellow 3G powder; the dyeings possess good fastness to light, water, washing, perspiration, and chlorine; very good fastness to hot pressing and acid; and excellent fastness to scrooping; it discharges to a pure white.

Plutoform Black CA Extra, a direct dyestuff particularly suited for the dyeing of rayon piece goods; it discharges to a good white with Rongalite C; the fastness to washing is good, but is improved by an aftertreatment with formaldehyde.

Sulphon Navy Blue 2BN, an acid color recommended primarily for dyeing tin-weighted silk; dyeings possess very good fastness to washing and can be discharged to a clear white with Rongalite.

Fastusol Brown LBRL, a direct dyestuff recommended in place of the LBR brand; it possesses very good fastness to light; very good to excellent fastness to hot pressing; and very good affinity and leveling properties; dyeings on silk, cotton, and viscose can be discharged with Rongalite C.

•

Castor-Oil Derivatives

A new series of castor-oil derivatives, suitable for use as dispersing and wetting agents, emulsifiers, plasticizers, and detergents, has been announced recently by Baker Castor Oil Co., Jersey City, N. J. The series consists of seventeen different high-boiling alkyl derivatives having a wide range of commercial applications, and each possessing distinctive properties.

•

Gardinol Flakes

A new development in the manufacture of Gardinols is the production of Gardinols WA and CA in flake form. Gardinol Flakes are said to possess the same desirable properties of the older powder types, and in addition to offer the advantage of being non-dusting.

PROCESSING IN THIS ISSUE

	page
Code Administration Job Replaces Code Making...	57
Extracting and Drying Thrown Silk and Rayon....	68
Piece-Slip Reduces Remnants in Finishing Plant....	77
Inspecting Fabrics for Shading and Other Defects..	77
Processing Men's High-Grade Novelty Suitings....	78
Many Applications for Metal Spraying.....	82
Careful Manipulation in Finishing Glove Silk.....	83
Purification Improves Fibers for Electric Insulation.	85
Continuous Processing of Tubular Knit Goods.....100	
Knit Goods Steamer and Tenter.....101	
Cloth Tentering Dryer.....101	

Processing Plant News

Jewett City (Conn.) **Textile Novelty Co.** has increased its capital stock from $75,000 to $200,000 to provide for expansion of the business based on improving prospects.

Pond Lily Co., New Haven, Conn., has started construction of an addition to its dyeing, bleaching and finishing plant. United Building Co., West Haven, has the general contract for the work.

Lowell Bleachery South, Griffin, Ga., has completed the installation of dyeing equipment, furnished by the Gaston County Dyeing Machinery Co.

Expert Silk Dyeing Co., Paterson, N. J., has recently installed an Inversand water softening system manufactured by Hungerford & Terry, Inc.

Malina Co. of New Jersey, Paterson, N. J., has taken over the entire building at 907 East 23d St., formerly occupied in part. Increase in production is planned particularly in warping and twisting departments.

Chamber-Storek Co., Peekskill, N. Y., has formed a Connecticut corporation and leased a building in Norwich, Conn., which will be used for the manufacture of photo-engraving rolls suitable for printing of textiles and oil cloths.

Textile Processing Corp., New York, has purchased the John N. Stearns & Co. silk mill at Elmira, N. Y.

National Silk Dyeing Co., Allentown and Williamsport, Pa., plants, are installing additional Inversand water softening equipment made by Hungerford & Terry, Inc., Clayton, N. J.

Blackstone Printing & Finishing Corp., Pawtucket, R. I., has been organized with capital of $30,000, to operate a local mill. New company is headed by Louis H. Klonsky and L. M. Trainor, Providence.

Donovan Textile Engravers, Inc., has been formed at Providence, R. I., by James F. Donovan, Ira M. Mackenzie and Harriet L. Fales.

Slatersville (R. I.) **Finishing Co.,** from plans by Lockwood Greene Engineers, Inc., Boston, Mass., will have work started soon on a 1-story, brick and steel addition, 55x235 ft. to the finishing unit.

Holliston Mills, Inc., have purchased the **East Braintree Bleachery & Dye Works,** Braintree, Mass., from P. L. Partridge, receiver for $6,601 in cash. Assets sold are subject to a $35,000 mortgage.

QUOTATIONS

At close of business, Nov. 1, 1933

Prices cover average qualities unless otherwise stated.

Cotton Goods

	*Nov. 1	*Oct. 2	Nov. 1 1932
PRINT CLOTHS			
27 -in., 64x60, 7.60	4½	4¾	2½
38½-in., 64x60, 5.35	6½	6¾	3½
39 -in., 68x72, 4.75	7¼	7¼	3¼
39 -in., 72x76, 4.25	8⅛	8⅛	3⅞
39 -in., 80x80, 4.00	9	9¼	4⅜
BROWN-SHEETINGS			
36-in., 56x60, 4.00	7¼	7¼	4¼
36-in., 48x48, 5.00	5½	6½	3½
37-in., 48x48, 4.00	6¼	7⅛	3¼
MISCELLANEOUS			
Drills, 37-in., 3 yd	9¾	10½	5½
Denims, 2.20	15½	17	10½
Tickings, 8 oz.	20	20	11
Standard prints	7¼	7¼	6½

*Tax included.

Cotton Waste

Peeler comber	9.50c
Peeler strip	9.00c
White spooler (single)	5.00c

Cotton Prices

Spot Cotton at:	Nov. 1	Oct. 2	For Month High	For Month Low	1932 Nov. 1
New York	9.75	9.90	9.90	8.95	6.10
New Orleans	9.45	9.61	9.69	8.58	6.04
Liverpool	5.48	5.53	5.54	5.41	5.43

FLUCTUATIONS OF FUTURES

	Closed Nov. 1	For Month High	For Month Low	Closed Oct. 2	Net Change
Nov.	9.45	9.76	8.67	9.74	—0.29
Dec.	9.55	9.88	8.77	9.84	—0.29
Jan.	9.61	9.92	8.83	9.92	—0.31
Feb.	9.68	10.01	8.91	10.01	—0.33
Mar.	9.76	10.11	9.00	10.10	—0.34
April	9.81	10.18	9.06	10.18	—0.37
May	9.87	10.28	9.13	10.27	—0.40
June	9.95	10.35	9.20	10.34	—0.39
July	10.03	10.43	9.27	10.41	—0.38
Aug.	10.19	.....	.....	.....	.....

AVERAGE PRICE JUNE-JULY SHIPMENT HARD WESTERN COTTON

F.o.b. New England

	Middling	St. Middling
1⅛-in.	12.05	13.30
1 5/16-in.	13.30	14.80
1¼-in.	16.55	18.55

Based on Dec. 9.55.

FOREIGN COTTONS

Alexandria Exchange, Nov. 1		Change
November, Sak.	12.67	—0.51
December Uppers	10.32	.....
Nov.-Dec. Shipment c.i.f. Boston (Tariff not included)		
Medium Sak.	23.50	—1.50
Medium Uppers	20.00	—0.60
(By Anderson, Clayton & Co.)		
India Rough, Calcutta Camilla		10.50
China Tientsin No. 1		11.50

Quotations on cotton cloth and cotton yarn as given on this page include the cotton processing tax. Where figures for dates earlier than Aug. 1, 1933, are given for comparison, such figures of course do not include this tax.

Cotton Yarn (Nominal)

(Tax Added)

CARDED (Average Quality)

Double Carded 2c—4c., higher according to quality.

SINGLE SKEINS OR TUBES (Warp Twist)

4s to 8s	$0.26	20s	$0.30
10s	– .26½	24s	– .33
12s	– .27	26s	– .34
16s	– .28½	30s	– .36

TWO-PLY SKEINS AND TUBES

8s-2	$0.26½	20s-2	$0.30
10s-2	– .27½	24s-2	– .33
14s-2	– .28½	30s-2	– .36
16s-2	– .29	40s-2	– .46

SINGLE WARPS

10s	$0.27	20s	$0.30
14s	– .28	24s	– .32½
16s	– .28½	30s	– .36

TWO PLY WARPS

8s-2	$0.27	20s-2	$0.30½
10s-2	– .28	24s-2	– .33½
14s-2	– .29	30s-2	– .36½
16s-2	– .29½	40s-2 ordin.	– .46½

HOSIERY CONES (Frame Spun)

8s	$0.27	18s	$0.30
10s	– .27½	20s	– .31½
12s	– .28	22s	– .32½
14s	– .28½	24s	– .33½
16s	– .29	26s	– .34½

COMBED PEELER (Average Quality) TWO-PLY — (Knitting Twist) Cones

20s-2	$0.38	50s-2	$0.53
30s-2	– .43	60s-2	– .62
40s-2	– .49	80s-2	– .79

WARPS, SKEINS AND CONES TWO-PLY — (Warp Twist)

20s-2	$0.39	50s-2	$0.55
30s-2	– .44	60s-2	– .60
36s-2	– .47	70s-2	– .71
40s-2	– .50	80s-2	– .82

SINGLES

14s	$0.35	38s	$0.47
20s	– .38	40s	– .49
28s	– .41	50s	– .53
30s	– .42	60s	– .59

MERCERIZED CONES — (Combed, Ungassed)

30s-2	$0.58	60s-2	.78
40s-2	– .62	80s-2	1.06

Raw Silk

Prices Nominal

	13/15 White	20/22 White	20/22 Yellow
Special Grand, 85%	$1.75	$1.55	$1.52½
Grand XX, 83%...	1.67½	1.52½	1.50
Special Crack, 81%	1.62½	1.50	1.47½
Crack XX, 78%...	1.57	1.47½	1.45
Extra, Extra, 73%..	1.55	1.45	1.42
Best Extra, 68%...	1.50	.....	.....

RAW SILK EXCHANGE

	Nov. 1	Oct. 2	For Month High	For Month Low	Net Change
November	1.50	1.69	1.72	1.42	—0.19
December	1.51	1.69	1.73	1.42	—0.18
January	1.51	1.69	1.71	1.42	—0.18
February	1.51	1.69	1.72	1.42	—0.18
March	1.51	1.69	1.72	1.42	—0.18
April	1.51	1.69	1.73	1.41	—0.18
May	1.51	.....	.....	.....	.....

Silk Yarns

Hosiery tram 5thd. Japan, 85%	$2.55
Hosiery tram, crack XX, 78%	2.40
60/2 spun silk	2.95

RAYON WASTE

Thread (for garnetting)	$0.15

Wool

OHIO, PENNSYLVANIA, ETC. (GREASE)

Fine delne.	$0.33 –$0.34	¾ blood	$0.41 –$0.42
Finecltng..	.27 – .28	¼ blood	.40 – .41
½ blood	.34 – .35		

TEXAS AND CALIFORNIA (CLEAN)

Texas, 12 months	$0.79 –$0.80
California, Northern	.73 – .75

MONTANA, IDAHO, WYOMING (CLEAN)

Staple fine	$0.82 –$0.83
Staple ½ bld.	.80 – .82
Fine and fine medium (original bag)	.79 – .81
⅜ blood	.76 – .78
¼ blood	.70 – .72

EASTERN SCOURED PULLINGS

A.A.	$0.93 –$0.95	B-Super	$0.76 –$0.78
A-Super	.83 – .85	C-Super	.68 – .70

CARPET WOOL (Nominal)

Aleppo (clean)	$0.19 –$0.22
Sining	.14 – .17
China filling (clean)	.15 – .18

Tops and Noils

TOPS—BOSTON

Fine (64-66s)	$1.16 –$1.17
Half-blood (60-62s)	1.12 – 1.13
Aver. ¾ blood (56s)	1.06 – 1.07
¼ blood (50s)	.96 – .98

NEW YORK TOP FUTURES

	Closed Nov. 1	For Month High	For Month Low	Closed Oct. 2
November	99.70	106.40	96.30	106.40
December	99.70	106.80	96.70	106.80
January	100.50	107.20	96.70	107.20
March	100.50	108.00	97.50	108.00
June	100.50	108.00	97.50	108.00

TOPS — BRADFORD ENG. (Nov. 1)

Fine (64s)	34 d	¾ bld. (56s)	25d
½ bld. (60s)	32½d	¼ bld. (50s)	18d

NOILS — BOSTON

Fine	$0.56 –$0.58	¾ bld	$0.51 –$0.53
Half bld.	.53 – .55	¼ bld.	.49 – .50

Worsted Yarns

ENGLISH SYSTEM WEAVING

2-20s 44s.	$1.25 –$1.27½	2-36s 58s.	$1.55 –$1.60
2-30s 46s.	1.35 – 1.40	2-40s 60s.	1.60 – 1.67½
2-30s mixes	1.80 – 1.85	2-50s 64s.	1.80 – 1.85

ENGLISH SYSTEM KNITTING

2-20s 44s.	$1.20 –$1.25	2-20s 60s.	$1.45 –$1.50
2-20s-50s.	1.27½– 1.30	2-20s 64s.	1.50 – 1.55

FRENCH SYSTEM

1-26s 64s.	$1.50 –$1.55	2-40s64s	
1-30s 64s.		Zephyrs.	$1.77½–$1.80
warp	1.60 – 1.62½	2-50s 66s.	1.90 – 1.95

Domestic Rayon

VISCOSE PROCESS

Denier	Filament	Price	Denier	Filament	Price
50	14	$1.25	150	24–40	$0.65
75	30	1.00	150	60	.70
100	40	.85	300	44	.55
125	36	.72			

NITRO-CELLULOSE PROCESS

Denier	First Qual.	Denier	First Qual.
75	$1.05 –$1.10	150	$0.70
100	.90 – .95	175	.70

ACETATE PROCESS

Denier	Price	Denier	Price
45	$1.40	100	$1.10
60	1.25	120–125	1.05
75	1.15	150	1.00

CUPRAMMONIUM PROCESS (TWISTED)

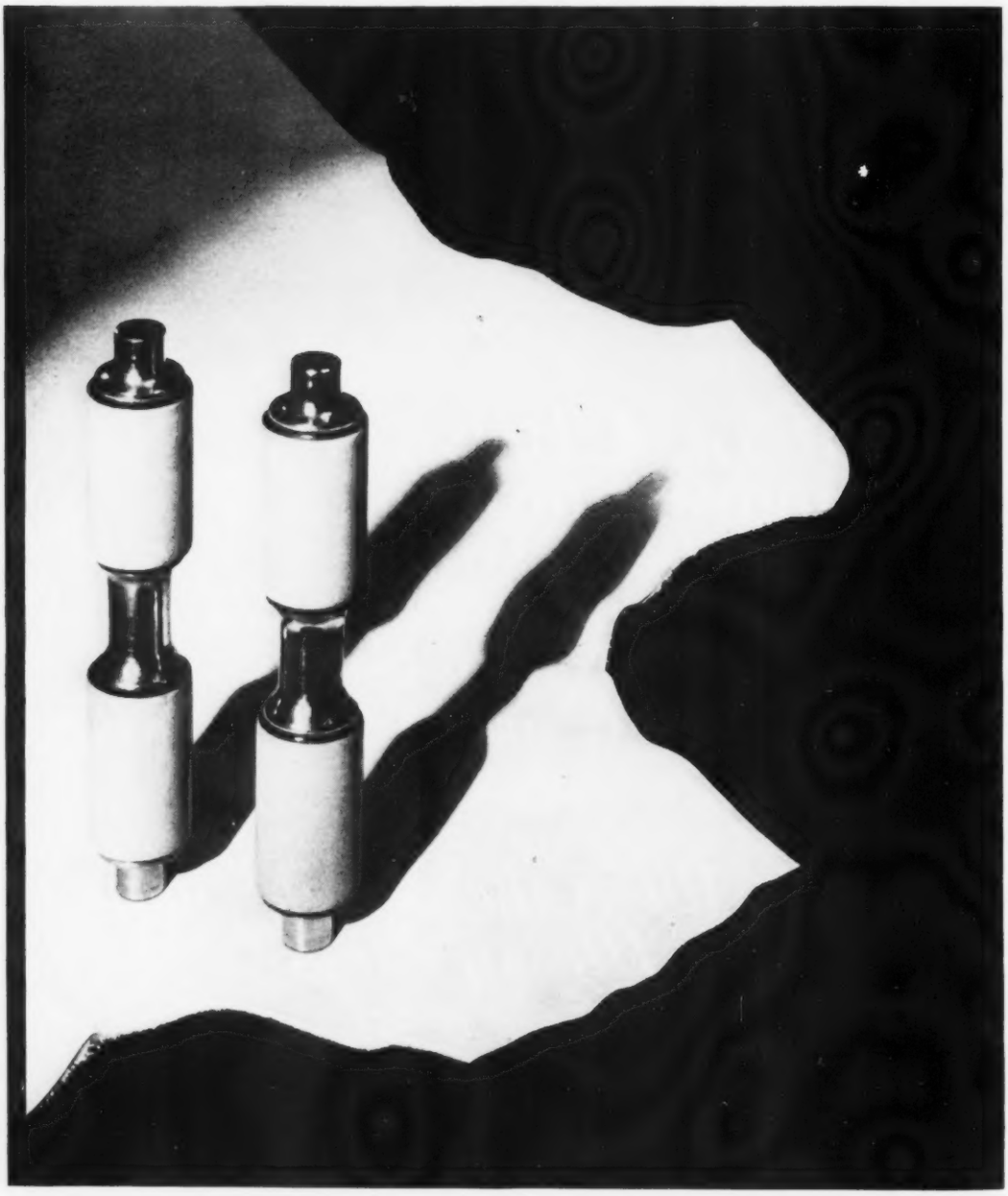
Denier	Filament	Price	Denier	Filament	Price
30	24	$1.60	100	75	$1.00
75	60	1.20	150	112	.90

The Wise Men
of Old
Followed the Star
That Signalled a New
Era in the Relations of Men
In the
Spirit of Christmas
and with Inquisitive
but Confident Hope
Let Us Face the New Year
With Faith in Ourselves
Our Country and Our Industry
We Wish the Textile Industry
a Merry Christmas
and
a Prosperous New Year
Draper Corporation

SPINNA CALF . . .

Drafts Smoothly—Wears Slowly . . .

THE smoothest of drafting is obtained with Spinna Calf; at the same time it wears slowly without the inconvenience and expense of frequently rebuffing or recovering.



A. C. LAWRENCE LEATHER CO.

Specialists in Textile Leather

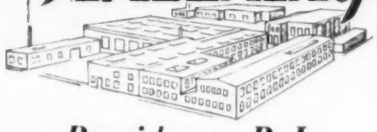
BOSTON, MASS. PEABODY, MASS. GREENVILLE, S. C.

Textile's AUTOMATIC TENTER CLIP

The Tenter Clip built to meet the demand for Quality and Efficiency at high speeds with maintenance costs reduced to a minimum.

We solicit inquiries for repairing and rebuilding Tenter Clips regardless of type or manufacture.

The Textile Finishing Machinery Co.



New York Office
50 Church St

Providence, R. I.

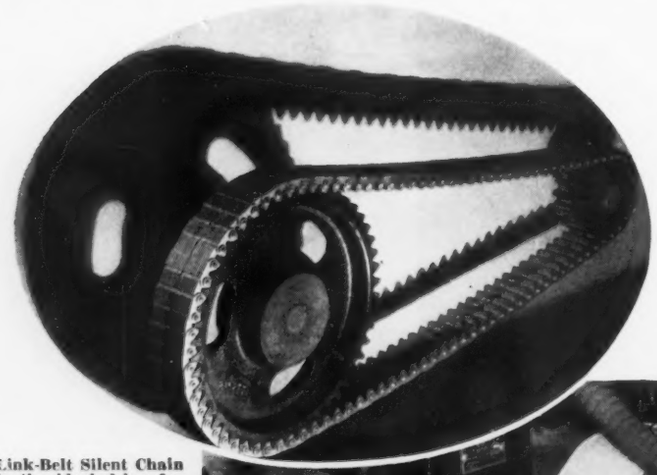
Southern Agent
H. G. Mayer, Charlotte, N. C.

Manufacturers of
The most complete line of Finishing Machinery in the United States including the most Modern Equipment for the Sanforizing Process of Controlled Shrinkage.

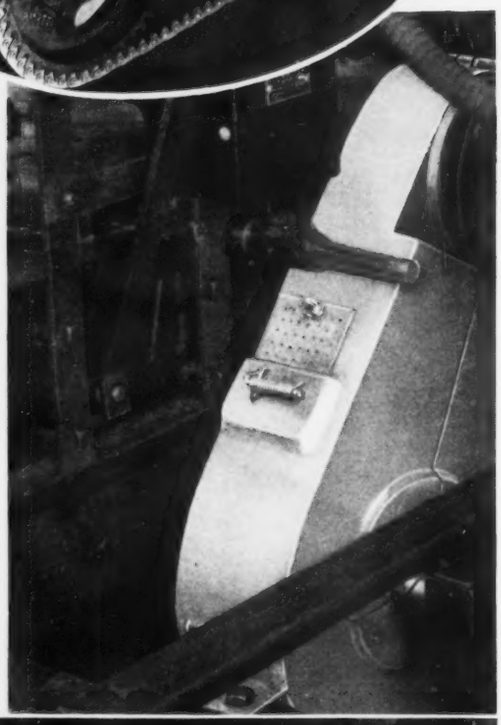
BRING YOUR OVERHEAD DOWN

Use

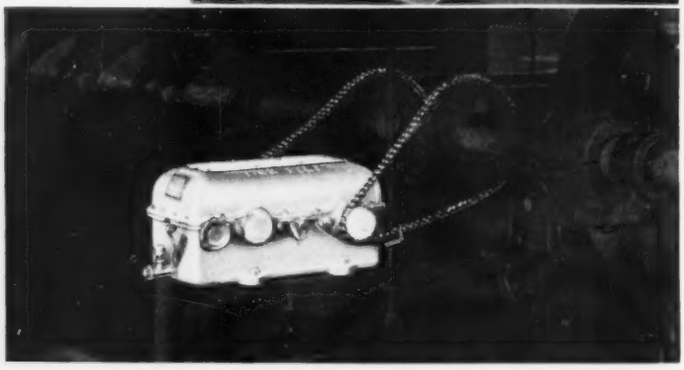
LINK-BELT POSITIVE DRIVES



Link-Belt Silent Chain is the ideal drive for Textile Mill Machinery, because it is Positive as a Gear, Flexible as a Belt, and More Efficient than Either. Ask for Data Book No. 125; also Pink List No. 725 listing drives up to 60 H.P., stocked by distributors.



The Link-Belt TEXTIL Silent Chain Drive Casing is Oil-Leak-Proof, and assures a cool-running drive with automatic, drop-by-drop lubrication. Ask for particulars.



The Link-Belt Positive, Infinitely Variable, P.I.V. Gear assures positive, micrometer-precision, fractional-revolution speed changes at will, by the mere turn of a handle. Send for Book No. 1274.

TO a large extent, the operating economy of an entire mill is determined by the type and design of power drives installed. Thus, the modernization of industrial power transmission systems, and the proper application of the drive, offer many opportunities for reducing operating costs, for the common good of employee, owner and customer.

Link-Belt Positive Chain Drives transmit power *positively*—without slip. They combine in one drive the advantages of both belt and gear drives without their disadvantages. Long service records and low maintenance costs are other reasons for their economy.

Equip your machines with Link-Belt positive drives as an aid to lower production costs.

LINK-BELT Positive Drives Include:
Silent Chain • Silverlink Roller Chain P.I.V. Gear (Positive, Infinitely Variable Speed Transmission) • Worm Gear Speed Reducers • Herringbone Gear Speed Reducers • Chain Drives of all types (Malleable Iron, Promal or Steel) • Herringbone Gears • Flexible Couplings • etc.

LINK-BELT COMPANY

Chicago Plant
300 W. Pershing Road

Philadelphia Plant
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Chicago,
Caldwell-Moore Plant
2410 W. 18th St.

Indianapolis, Dodge Plant
519 N. Holmes Ave.

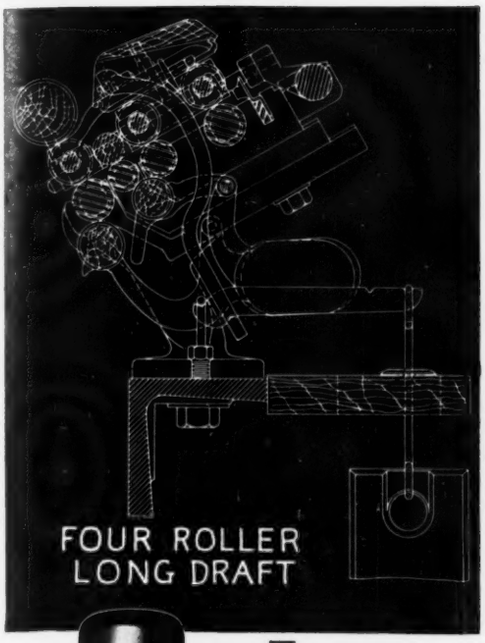
Indianapolis, Ewart Plant
220 S. Belmont Ave.

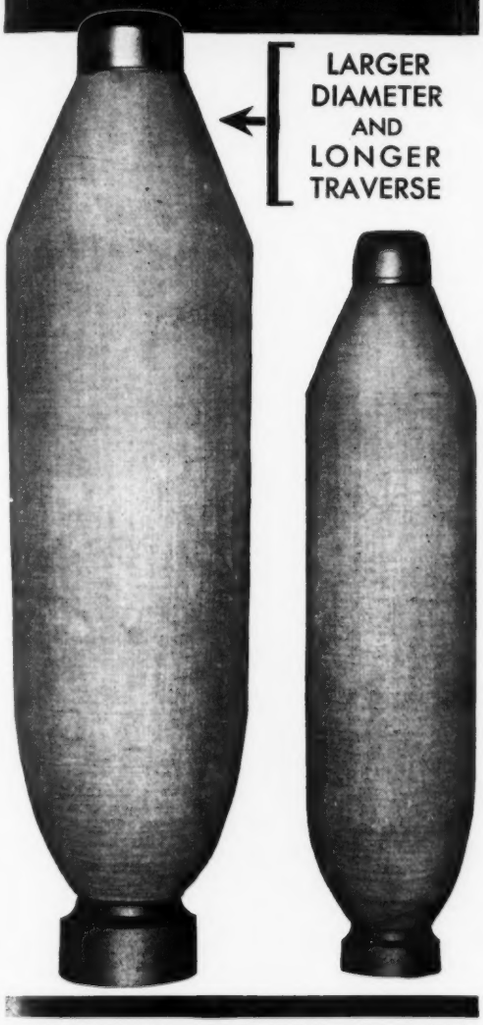
San Francisco Plant
400 Paul Ave.

Toronto Plant
Eastern Ave. & Leslie St.

Offices in Principal Cities

4867





3 FEATURES that make MODEL B *the* last word *in* SPINNING ECONOMY

THE H & B MODEL B Spinning Frame, equipped with Four Roller Long Draft, Extra Large Rings, and Extra Long Traverse, is the last word in modern, low cost spinning. The large package reduces doffing costs to a minimum while the four roller long draft reduces card room costs.

The H & B Four Roller System of Long Draft makes a better yarn. This system allows for the natural positioning of the fibres. The bite of the second roll is not carried so near to the front roll as are the belts in other systems, so that "plucking" is prevented. Also the longer fibres are drafted to form the core of the yarn, where they have less tendency to break up into shorter fibres.

Year after year continuous running is maintained the same as in regular spinning. This machine is equipped with Traversing Thread Board, Extra Duty Spindles and High Speed Rings.

The Model B Frame is now being installed in mills where cost studies have shown it to be the answer to present day spinning problems. Let us demonstrate that it can be successfully applied to your problems.

H & B AMERICAN MACHINE COMPANY

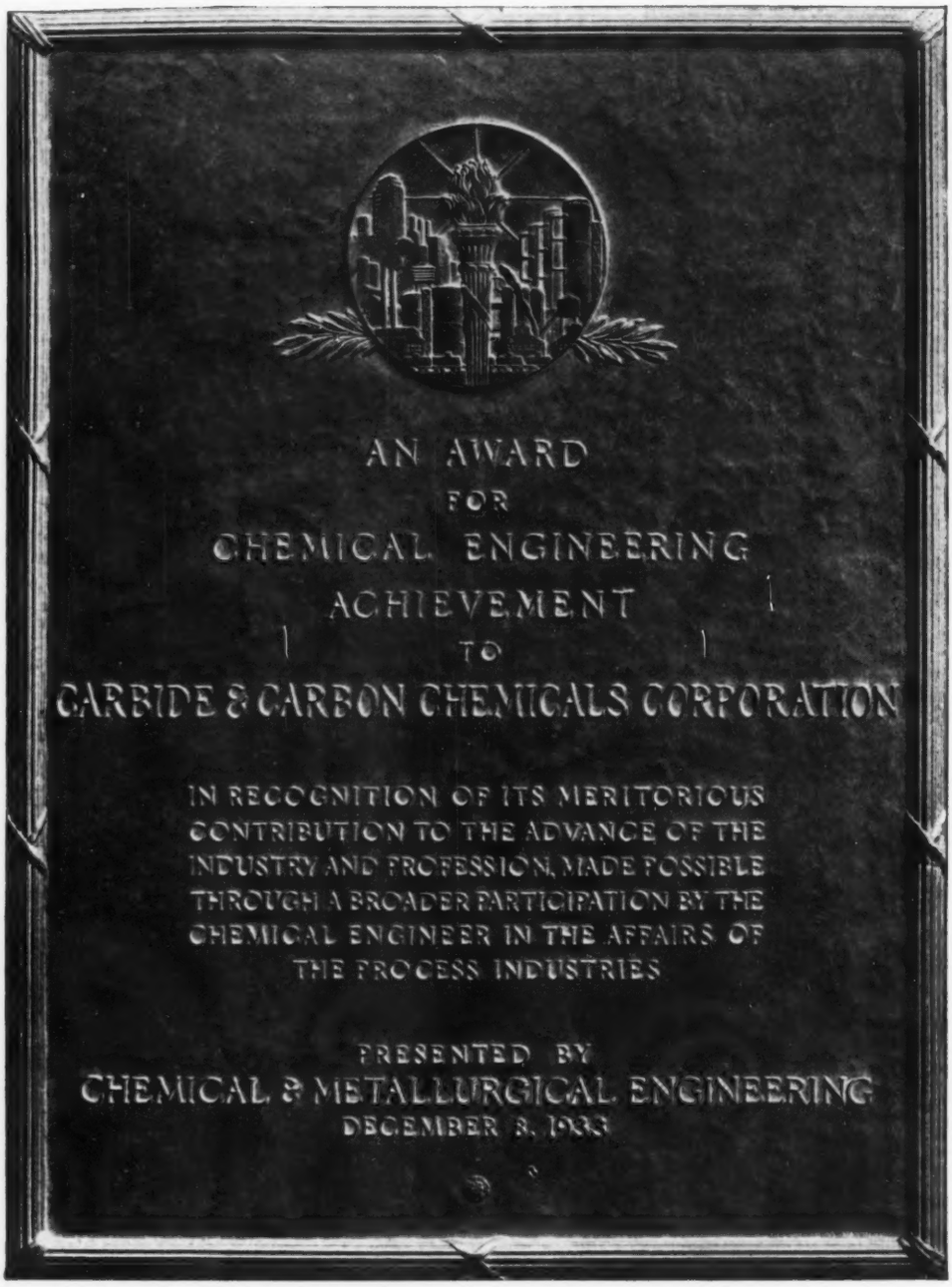
Cotton Preparatory and Spinning Machinery

PAWTUCKET, R. I.

BOSTON OFFICE • 161 Devonshire Street
ATLANTA OFFICE • 815 Citizens & Southern National Bank Building

H&B

MODEL B SPINNING FRAME


AN AWARD
FOR
CHEMICAL ENGINEERING
ACHIEVEMENT
TO
CARBIDE & CARBON CHEMICALS CORPORATION
IN RECOGNITION OF ITS MERITORIOUS
CONTRIBUTION TO THE ADVANCE OF THE
INDUSTRY AND PROFESSION, MADE POSSIBLE
THROUGH A BROADER PARTICIPATION BY THE
CHEMICAL ENGINEER IN THE AFFAIRS OF
THE PROCESS INDUSTRIES
PRESENTED BY
CHEMICAL & METALLURGICAL ENGINEERING
DECEMBER 8, 1933

ORGANIC CHEMICALS
SYNTHETICALLY PRODUCED IN THE U.S.A.
EXCLUSIVELY BY
CARBIDE AND CARBON CHEMICALS CORPORATION

Acetic Anhydride — Acetone — Butyl Acetate
Butyl Alcohol — Butyraldehyde — Butyric Acid
Ethyl Acetoacetate — Ethyl Alcohol — Ethyl Ether

SYNTHETIC ORGANIC CHEMICALS
PRODUCED IN THE U.S.A. EXCLUSIVELY BY
CARBIDE AND CARBON CHEMICALS CORPORATION

Acetoacetanilid
Butyl Carbitol
Butyl Cellosolve
Carbitol ★
Carboxide ★
Cellosolve ★
Dichloroethyl Ether
Diethanolamine
Diethyl Sulfate
Diethylene Glycol
Dipropyl Ketone
Ethylene Chlorhydrin
Ethylene Glycol
Ethylene Oxide
Isopropyl Ether
Methyl Amyl Acetate
Methyl Amyl Alcohol
Methyl Cellosolve
Methyl Isobutyl Ketone
Monoethanolamine
Propylene Chlorhydrin
Propylene Glycol
Propylene Oxide
Triethanolamine
Vinyl Chloride
Vinylite ★ Resins

★ *Trade-mark Registered*

CARBIDE AND CARBON CHEMICALS CORPORATION

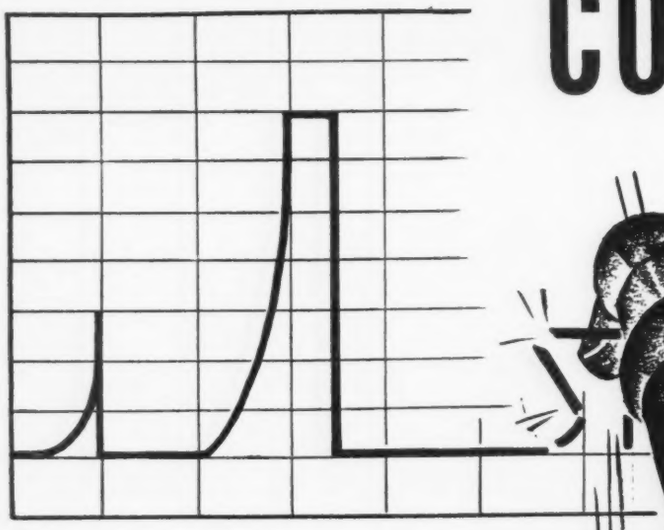
PRODUCERS OF SYNTHETIC ORGANIC CHEMICALS

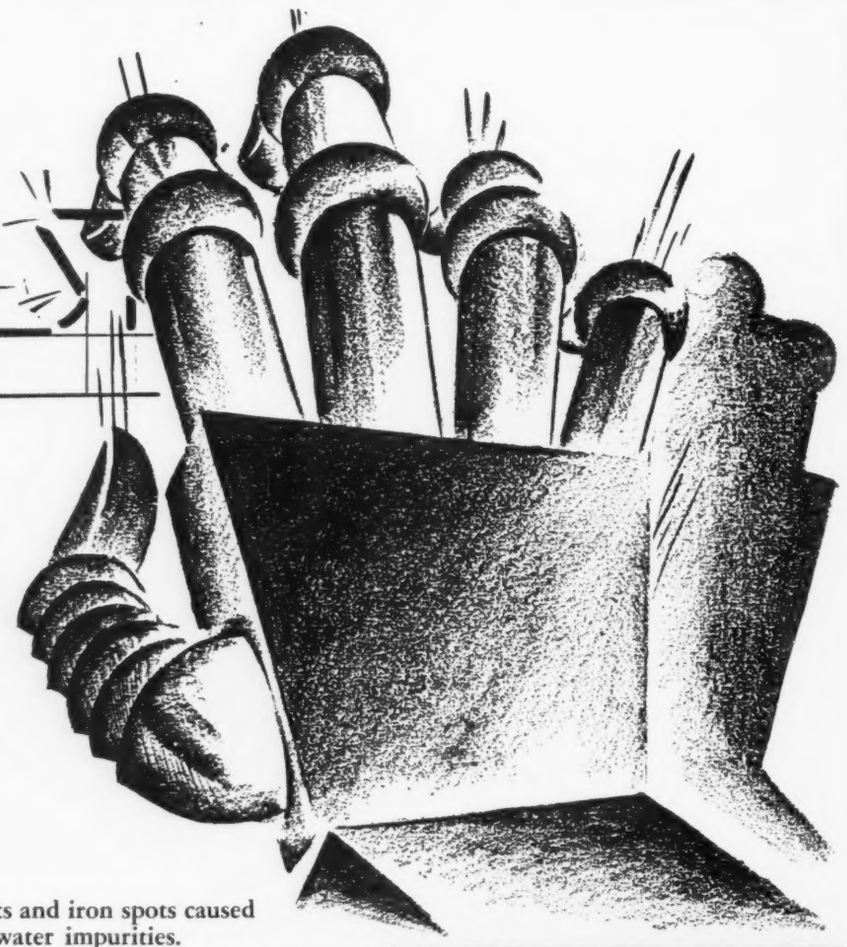
30 EAST 42nd STREET, NEW YORK CITY

Unit of Union Carbide UCC *and Carbon Corporation*

TW-12-33

TEAR DOWN THOSE COSTLY PEAKS





with AUTOMATIC SOFT WATER CONTROL

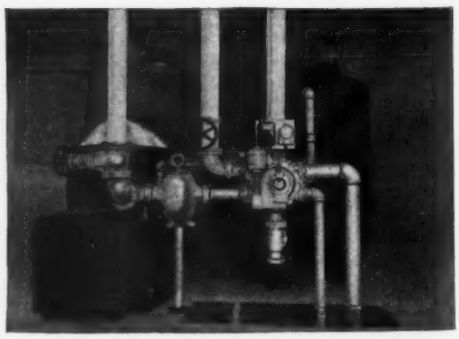
CODES put costs up — water treatment helps to bring them down. Not only that, *at the same time it improves the quality of your product!*

We know this to be true, and hundreds of mills in all branches of the textile industry have proved it to their own satisfaction. It stands to reason that the removal of dirt, hardness, color, odor, oil, iron, manganese, etc., from water effects a direct betterment of quality of all wet-processed materials.

Water treatment saves supplies. Saves reruns. Eliminates "hungry" spots and iron spots caused by water impurities.

So give thought to water, the raw material which is largest in volume of all that enter your mill. As other costs rise, you can count on water treatment to save a portion of those increased costs.

We'll be glad to go into facts and figures with you — send now for a copy of "Reducing Textile Costs and Troubles." No obligation, but it may show you how to make savings of thousands of dollars a year. The Permutit Company, 330 West 42nd Street, New York.



The latest development in the field of water treatment —Permutit's fully automatic zeolite water softener. More efficient, produces completely softened water at a lower cost per thousand gallons than ever before. All operations automatically performed under precise mechanical control. Automatic control can be applied to existing equipment.

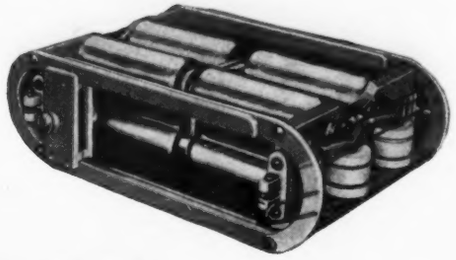
Permutit *Water Treating Equipment*

PAYS FOR ITSELF

BUTTERWORTH

If you dye, finish, or process silk, rayon, cotton, wool, worsteds, or mixtures, in tubular knit form, you will want to know more about this remarkable machine . . .

The TUBE-TEX •



The Driven Spreader, heart of the Tube-Tex machine

•

"FROM dye kettle to finished goods in less than five minutes" is the slogan which we have adopted for the TUBE-TEX machine.

Running at any speed, up to 36 yards per minute, the TUBE-TEX takes goods directly from the dye beck, and, in continuous operation, extracts, processes, dries, finishes, conditions, and measures.

Two operators only are required. The TUBE-TEX saves in labor 50-75%; in power 10-25%; in space 50-75%. It insures clean ends, less re-dyes, fewer re-washes, no end trimming. It handles all weights of fabric on 12" to 30" tubes at 25 to 36 yards per minute. Moisture regain is controlled. It eliminates extractor marks, drier stick marks, moire and creases. It gives uniformity, yard to yard, piece to piece, day to day. It insures improved quality due to correct handling. Any desired handle or feel can be attained by proper chemical treatment.

Complete information about the Tube-Tex will be sent promptly

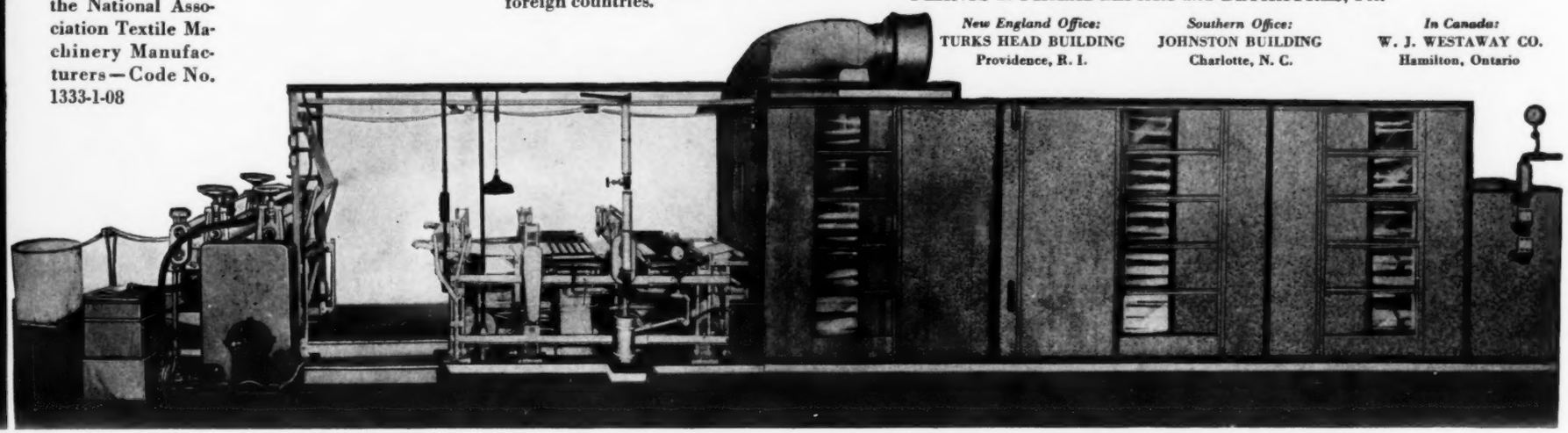
•

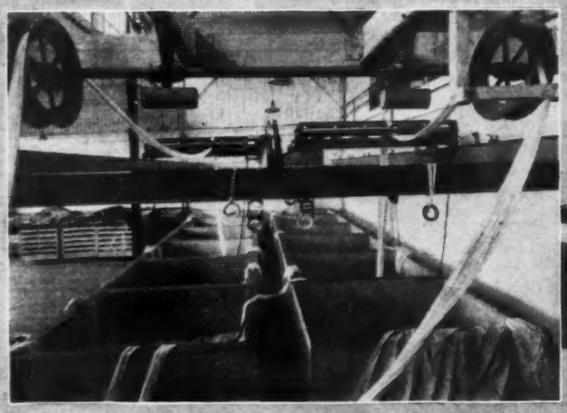
We are licensed to build Tube-Tex machines by the Tubular Textile Machinery Corporation, New York City, which controls all patents issued and pending in the U. S. A. and foreign countries.

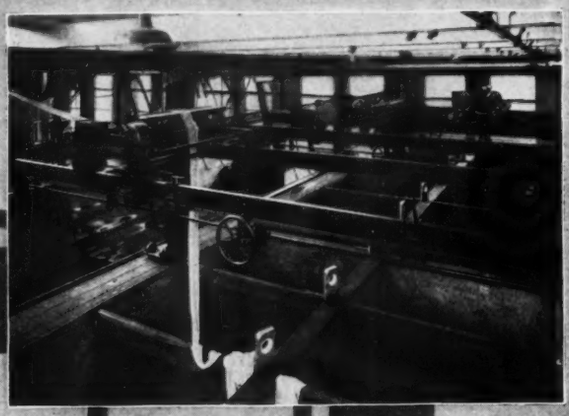
We are members of the National Association Textile Machinery Manufacturers—Code No. 1333-1-08

H. W. BUTTERWORTH & SONS CO., *Established 1820*
PHILADELPHIA, PA.
PLANTS *at* PHILADELPHIA *and* BETHAYRES, PA.

New England Office: TURKS HEAD BUILDING, Providence, R. I.
Southern Office: JOHNSTON BUILDING, Charlotte, N. C.
In Canada: W. J. WESTAWAY CO., Hamilton, Ontario







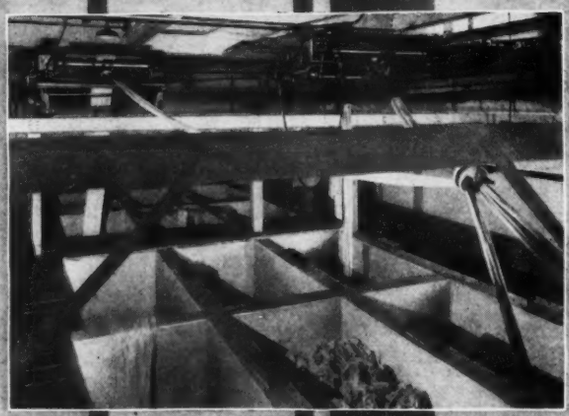
The leading and
most progressive bleacheries
of the country use

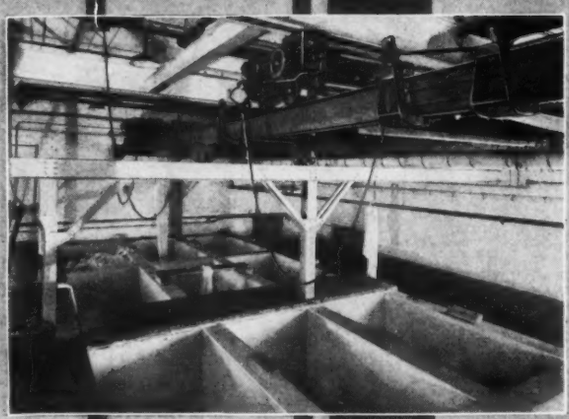
PERKINS
AUTOMATIC
BIN PILERS

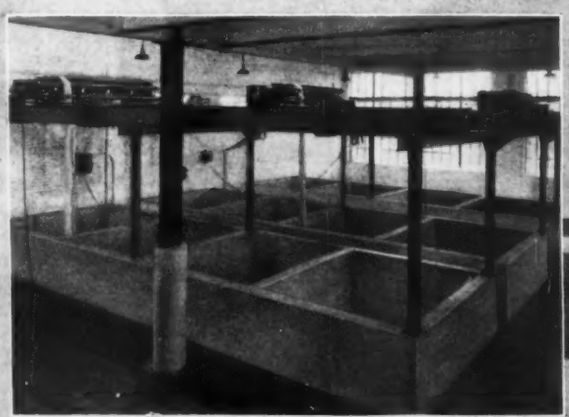
for operating economies and
to improve the quality of their
product.

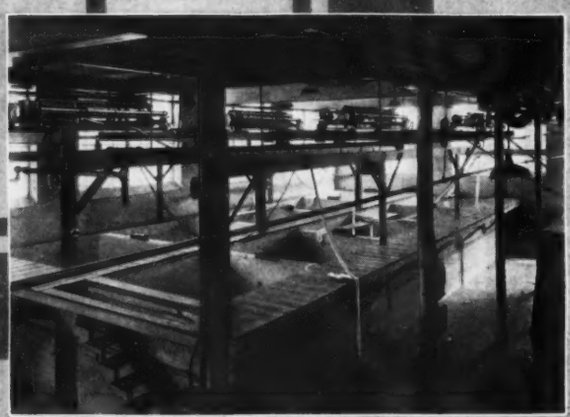
◆

B. F. PERKINS & SON, INC.
Engineers and Manufacturers
HOLYOKE, MASS.









"YOU'LL SAVE $35,000 A YEAR BY SPENDING ONLY $8,000 NOW"—
"NO SLASHER IS COMPLETE WITHOUT ENGINEERED AUTOMATIC TEMPERATURE CONTROL"
THESE MEN speak FOR YOUR PROFIT
"A FINE INVESTMENT —this system of warp preparation and slasher control"
"Only precise temperature control gives uniform results and properly sized yarns"—

They are all talking about one thing—the advantages of a Taylor System of Automatic Temperature Control in the Slashing Process

SUPERINTENDENTS of many leading northern and southern mills have found a way to assure goods of uniformly higher quality. They have discovered how to reduce costs in these days of the process tax. They have found out how to increase production without adding machinery.

A Taylor System of Automatic Temperature Control is responsible. This system assures uniformity in size control and in content of size and moisture in warps. It produces stronger, more elastic warps . . . causes fewer loom stoppages . . . assures more efficient work by weavers and machines . . . reduces shedding . . . causes a saving in lint cotton . . . increases production of uniformly weighted and finished goods.

If you do not have this automatic temperature control in your mill, today is the time to consider its installation. A Taylor Representative working with Taylor Engineers can soon determine how you can use Slasher Control most efficiently. What you get is a unified system of indicating, recording and regulating instruments designed and engineered especially to fit *your* specific needs. Taylor Engineers supervise installation. Records show that this System usually pays for itself in a year—often in a shorter time.

Send for a Taylor Representative. Let him make a survey in your mill. Write also for a booklet telling more about this System of Slasher Control. Write our sales offices in Atlanta, Boston or Toronto, Canada. Or direct to Taylor Instrument Companies, Rochester, New York.

SPECIAL TAYLOR NEWS FLASH

All Taylor Temperature and Pressure Recorders and Recording Regulators are now being shipped with a newly-designed die-cast case. The instrument mechanism inside contains distinct improvements designed to give industry the most modern, accurate and durable temperature and pressure control equipment. More detailed information on these new Taylor Instruments later. Meanwhile, if you are using them, enjoy their fine accuracy and positive operation.

† Tycos **Taylor**

Indicating Recording • Controlling

TEMPERATURE *and* PRESSURE INSTRUMENTS

† The name Taylor now identifies our complete line of products including Tycos instruments.

DOES YOUR WASHER THROW AWAY DIRTY WATER AS FAST AS THIS?

There isn't a great deal of difference between Washers of whatever make or vintage as far as "running in the soap" is concerned. It is the rinsing that costs money—and that is where the difference between Machines shows up.

Rinsing isn't complicated—the problem is simply one of getting rid of dirty, soapy, contaminated water and replacing it with clean, clear, fresh water.

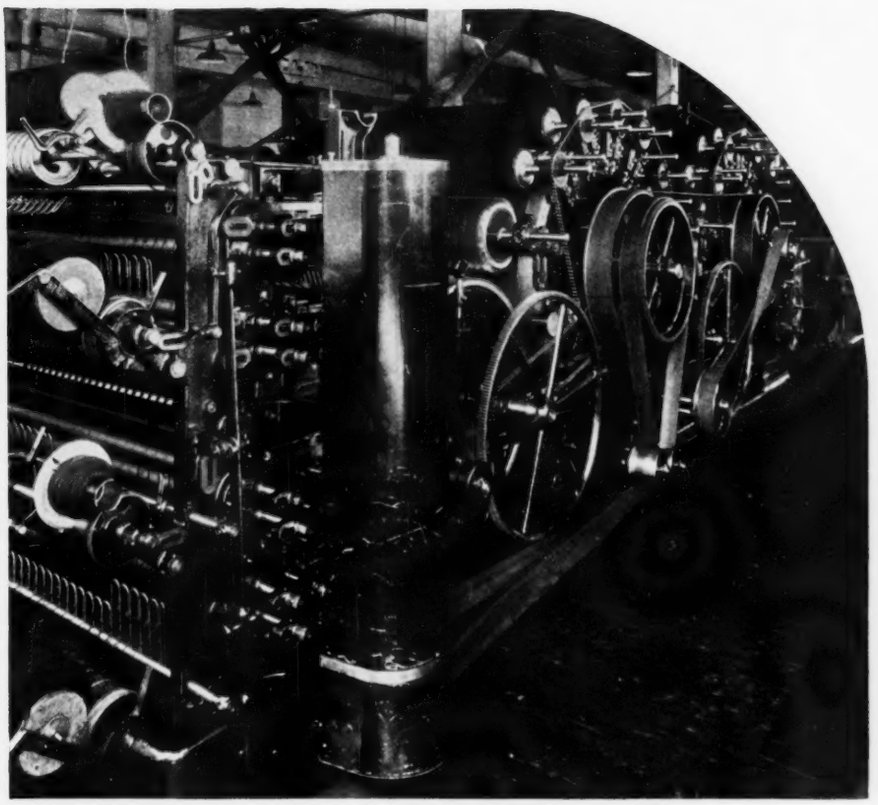
This rate of exchange of old and dirty for new and clean water is a direct measure of the efficiency of the process.

If your washer does not throw away dirty water as fast as this, send for one of our practical men to talk it over. There is no obligation to you.

RIGGS AND LOMBARD
INCORPORATED

LOWELL, MASS.

SKF EQUIPPED
BUILT BY
SOUTEX
MACHINE
COMPANY

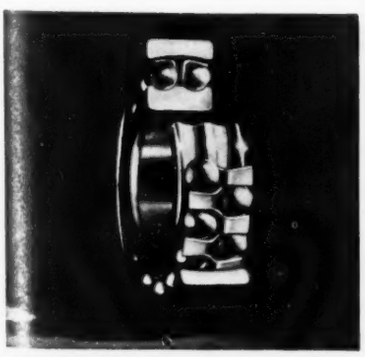


ECONOMICAL SKF BEARINGS BOOST ▼ ▼ ▼ PRODUCTION

Each of the forty-eight-inch cylinders on the "Soutex 48" Woolen Card Set and Tape Condenser, is mounted on SKF Bearings and Pillow Blocks. In addition, the fancy rolls also run on SKF's. Plenty of SKF Bearing protection here and for a very good reason . . . SKF Performance counts where quality results must be produced economically . . . and continuously.

Long-life SKF Bearings that always run smoothly, and easily are an important factor in keeping textile machinery at its highest efficiency. And the same holds true for Soutex equipment. SKF's never require adjustments, and therefore maintain the nicety of settings. Adequately housed, the bearings are protected from dust and there is *no danger of lubricant leakage* and consequent spoilage.

●*You may buy a bearing as a bargain but try and get a bargain out of using it, for nothing is apt to cost so much as a bearing that cost so little*



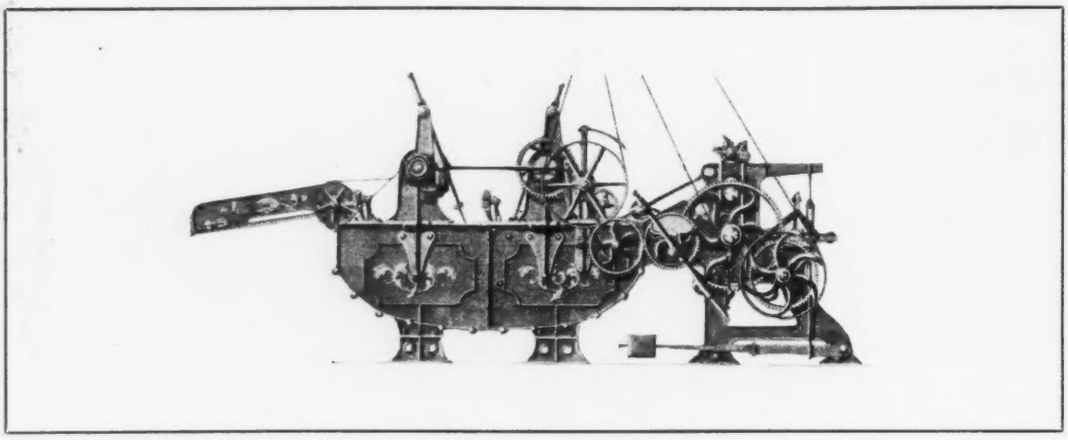
3130

SKF INDUSTRIES, INC., 40 EAST 34th STREET, NEW YORK, N. Y.

SKF
Ball and Roller Bearings

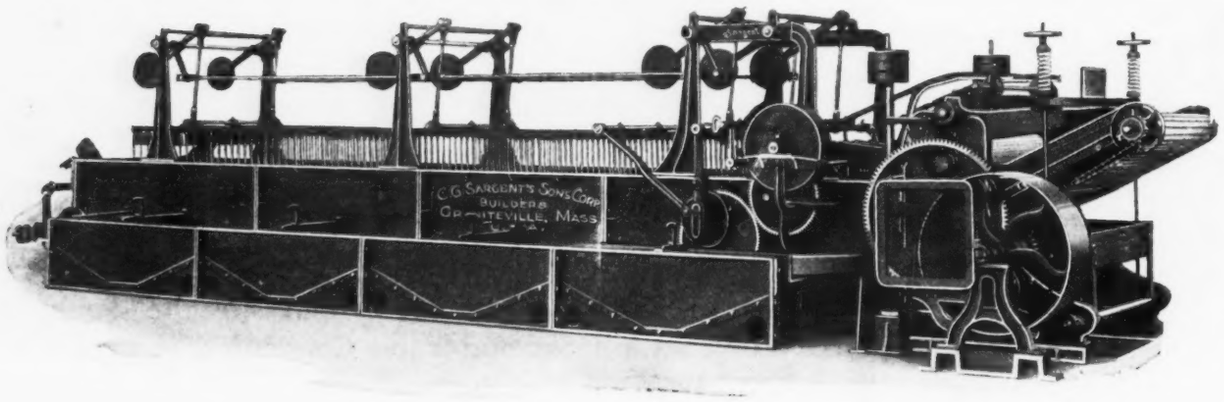
SARGENT WOOL WASHERS

"Engineered for the needs of the industry"—**1865**



From an old print of Sargent Wool Washer of 1865

"Engineered for present day needs"—



1933 Sargent Wool Washer

THE Model 34 machine has the main rake or harrow and in addition an auxiliary rake known as the carrier which conveys the wool forward from the rake and delivers it directly into the nip of the squeeze rolls. This carrier operates at a faster speed than the rake and carries the mass of wool in a thin layer. The level of the liquor is maintained almost to the nip of the rolls the wool fibers being therefore immersed, or if thought desirable the last few inches of travel over the carrier table to the rolls may allow the wool to emerge from the bath, thus giving a slight draining action before squeezing.

The Model 35 machine dispenses with the use of the carrier, the rake at each orbit conveying a mass of wool with a surge of liquor over the crown of the incline when it flushes to the nip. The patent voluminous self-flushing hopper bottoms are one of the very vital meritorious points possessed by this machine.

A capacity based on the greasy weight of wool which is the usual manner of rating the production of a wool scouring machine, may be had of from fifteen hundred to twenty thousand pounds in ten hours.

Also manufacturers of: Acidifying Machines . . Automatic Extractor Machines . . Automatic Feeders . . Back Washers . . Back-Wash Dryers . . Bagging Machines . . Ball Winding Machines . . Burr Pickers . . Carbonizing Dryers . . Cloth Dryers . . Carbonizing Dusters . . Cotton Stock Dryers . . Crush Roll Machines . . Dusting Machines . . Mixing Pickers . . Opening Machines . . Press Roll Machines . . Special Dryers . . Wool Drying Machines . . Wool Washing Machines . . Yarn Conditioning Machines . . Yarn Scouring Machines.

C. G. SARGENT'S SONS CORP.

Founded in 1852

Graniteville, Mass.

Southern Agents
Fred White, Charlotte, N. C.
Fred Brooks, Atlanta, Ga.

Philadelphia Agent
R. C. Jefferson Co.
640 Drexel Bldg.

Condor
TRADE MARK
Compensated
PAT. APPLIED FOR

Running in dust and grit is just an everyday job for this 14-inch 7-ply Condor Compensated Belt

Practically all belts sold today will give service on standard drives, but it's the adverse conditions under which Condor Compensated Belts are now and then called on to operate that bring out their sterling qualities.

Condor LINE

Transmission Belt	Fire Hose
V-Belt	Hydraulic Hose
Conveyor Belt	Steam Hose
Air Hose	Water Hose
Contractors Hose	Chute Lining
Sand Blast Hose	Launder Lining
Suction Hose	Industrial Brake Blocks

Condor Compensated Belts have eleven advantages not found in standard rubber belts. Most important of all is its advanced design which allows low tension operation, and still retains an overload capacity of 100%. It is the only rubber belt that responds to belt dressing.

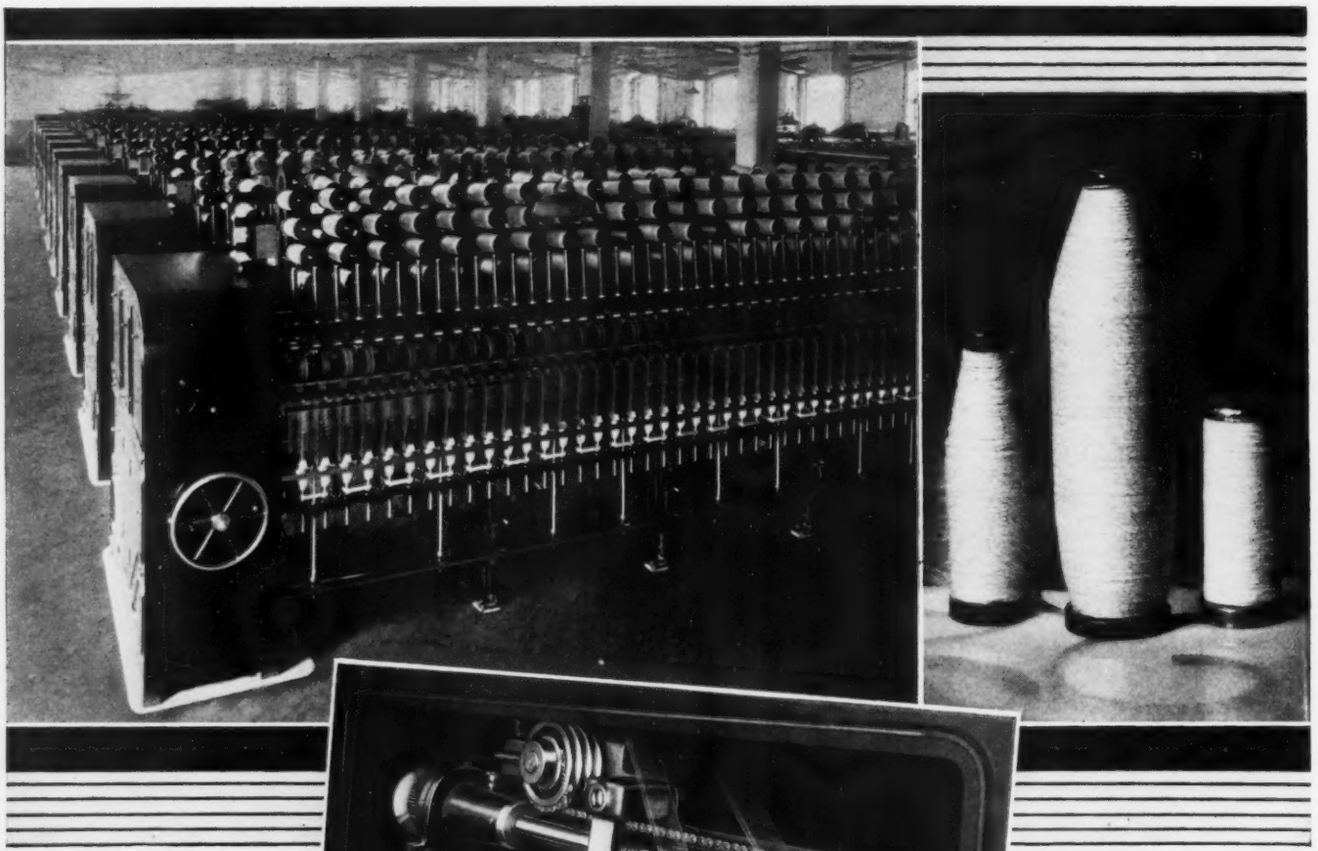
The most difficult drives can be safely belted with Condor Compensated Belt.

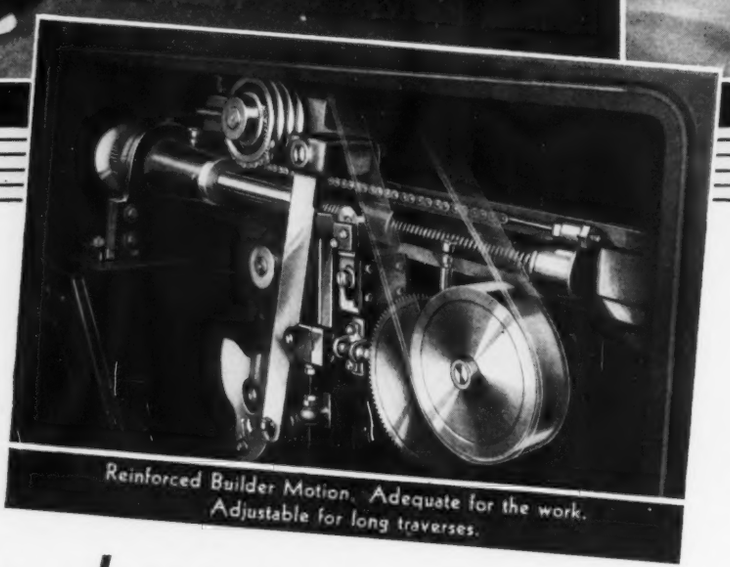
Sold by leading Jobbers

NRA

THE MANHATTAN RUBBER MFG. DIVISION
OF RAYBESTOS-MANHATTAN, INC.

EXECUTIVE OFFICES AND FACTORIES, PASSAIC, NEW JERSEY





Reinforced Builder Motion. Adequate for the work. Adjustable for long traverses.

Large Package . . . Bradford Worsted Spinning Frames

* * * LARGER PACKAGES cut doffing costs to a minimum, reducing production loss from frequent stoppages. Knots are less frequent. Winding costs lessened 75%. Rewound filling bobbins mean higher loom efficiency.

* * * HIGH SPEEDS obtained comparable to cap spinning speeds. Variable speed spindle drive enables you to spin successfully at higher speeds with less end breakage. Stationary ring rails with yarn tension and balloon under positive control, without sacrifice of quality. Traverses to 11". Packages 3" diameter, weighing up to 12 oz.

* * * COMPARE PRESENT COSTS on cap spinning with modern ring spinning using special autolubricated vertical rings. Quick change from regular to reverse twist. Moving parts completely and securely enclosed. Box head construction with drives inbuilt.

WHITIN MACHINE WORKS **WHITIN** WHITINSVILLE, MASS.

Stockings men like to give for Christmas

—MADE ON THE MODEL "K"

The gentleman in the picture has just presented the lady with several pairs of the beautiful seamless stockings which the Model K spiral machine produces.

He knows his gift is acceptable, for he knows that this hose is, first of all, clear in texture and sheer as fine hose must be. He knows it is made with a *perfect-fitting ankle* (notable achievement of this spiral machine) . . . that it has the exclusive "Gussetoe", the *toe with depth*, provided by an actual little gusset, knitted in. He also knows that the "square" *heel* affords a truly remarkable snug fit.

The lady will be pleased. So will the gentleman. And so will the manufacturer who offers this product of the Model K.

"THIS IS THE SCOTT & WILLIAMS MACHINE AGE"

ESTABLISHED 1865

SCOTT & WILLIAMS

INCORPORATED

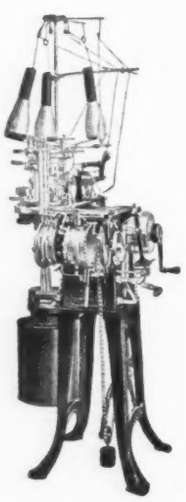
366 BROADWAY, NEW YORK, N. Y.

Three styles of children's hose made on the Komet Machine by the Schuylkill Hosiery Mills, Reading, Pa., manufacturers of high grade children's hosiery exclusively.

Rib-to-the-toe children's hose

ON THE KOMET MACHINE

A fully automatic machine, making a rib-to-the-toe stocking, 1 x 1 rib top, the genuine 6 x 3 English rib leg and foot or any combination of rib or plain hose, with a draw thread finished French welt and a 5 color selective striper for striping cuff, body or both.

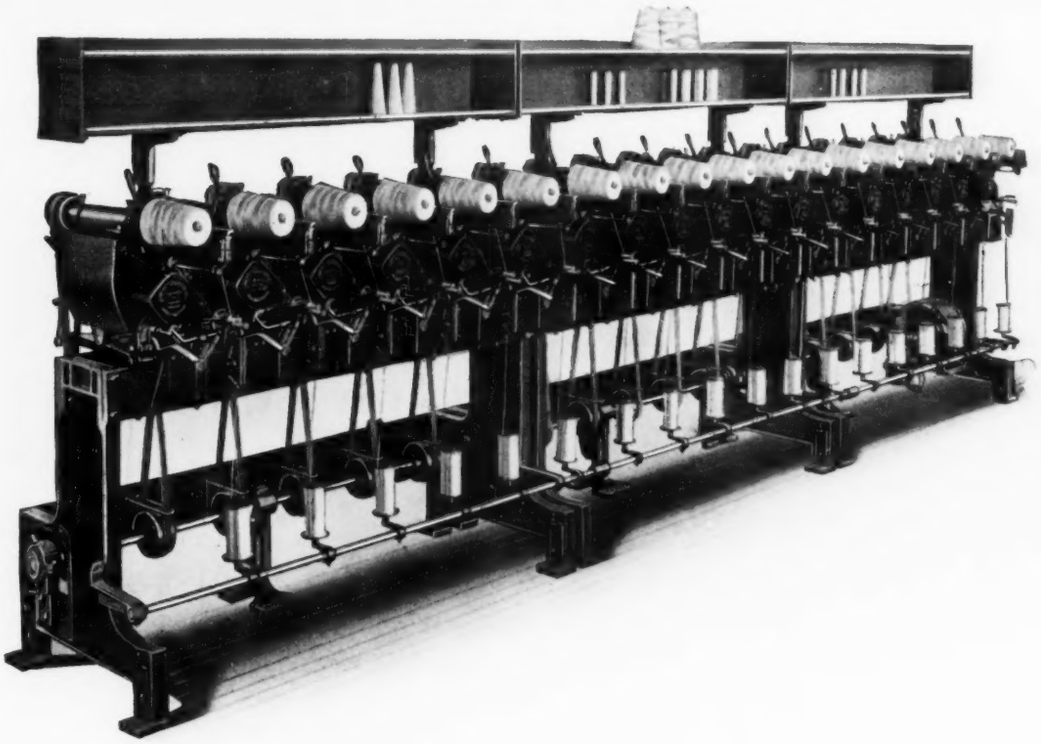


STANDARD-TRUMP
BROS. MACHINE CO., INC.
366 Broadway New York, N. Y.

Sole U. S. representatives for the Komet Knitter, manufactured by the Bentley Engineering Company of Leicester, England.

STANDARD TRUMP
Established 1872

FULLY AUTOMATIC



The FOSTER
RAYON CONE WINDER

THE Foster Model 75 produces cones of Rayon and other Synthetic fibres that fulfill the most exacting Knitting requirements. Foster cones unwind with unvarying tension and are free from defects that cause "catching" of strand at the cone base.

The Model 75 has interchangeable parts for Cones or Tubes, Dry or Wet winding and Belt or Gear Gainer.

FOSTER MACHINE COMPANY
WESTFIELD, MASS.

SECOND NATIONAL

KNITWEAR
INDUSTRIAL EXPOSITION

Grand Central Palace, New York, N. Y.

February 12-16, 1934

Your exhibit at the 1934 Knitwear Industrial Exposition will place you and your products and services face to face with buyers in the KnitwearTrade.

Here in five days you will accomplish what would ordinarily require weeks of travel and thousands of dollars of expense.

Over five thousand interested buyers, superintendents, and other Knitting Mill executives attended the 1933 exposition. They came from 26 states and seven foreign countries. The 1934 exposition will be even better attended.

Plan your exhibit now for the SECOND NATIONAL KNITWEAR INDUSTRIAL EXPOSITION

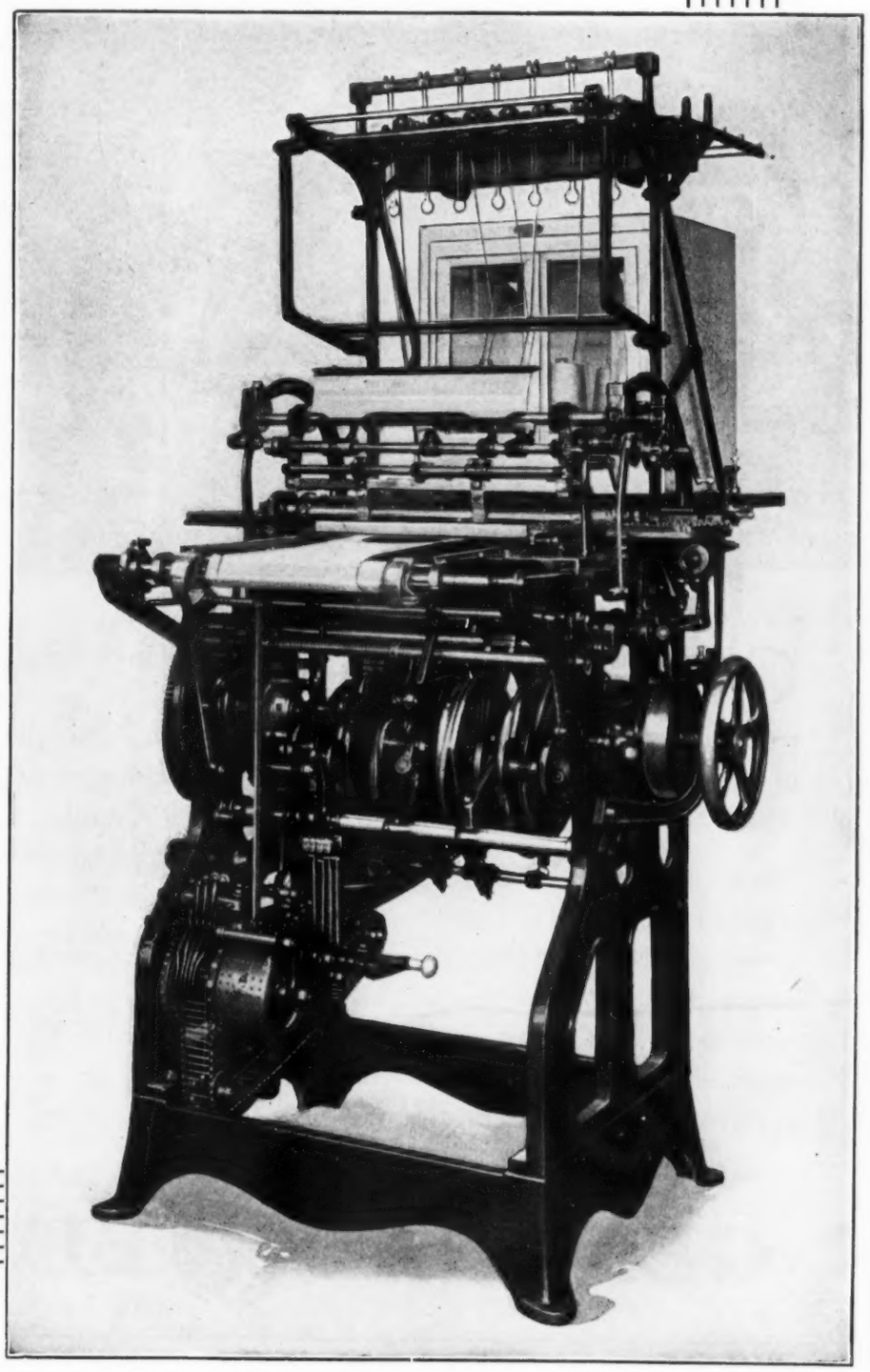
Communicate with one of the following for complete information.

A. B. COFFMAN
Exposition Manager
35 East Wacker Drive
Chicago, Ill.

M. E. THAYER
Eastern Representative
517 Grand Central Palace
New York, N. Y.

The "New Deal" calls for New Efficiency

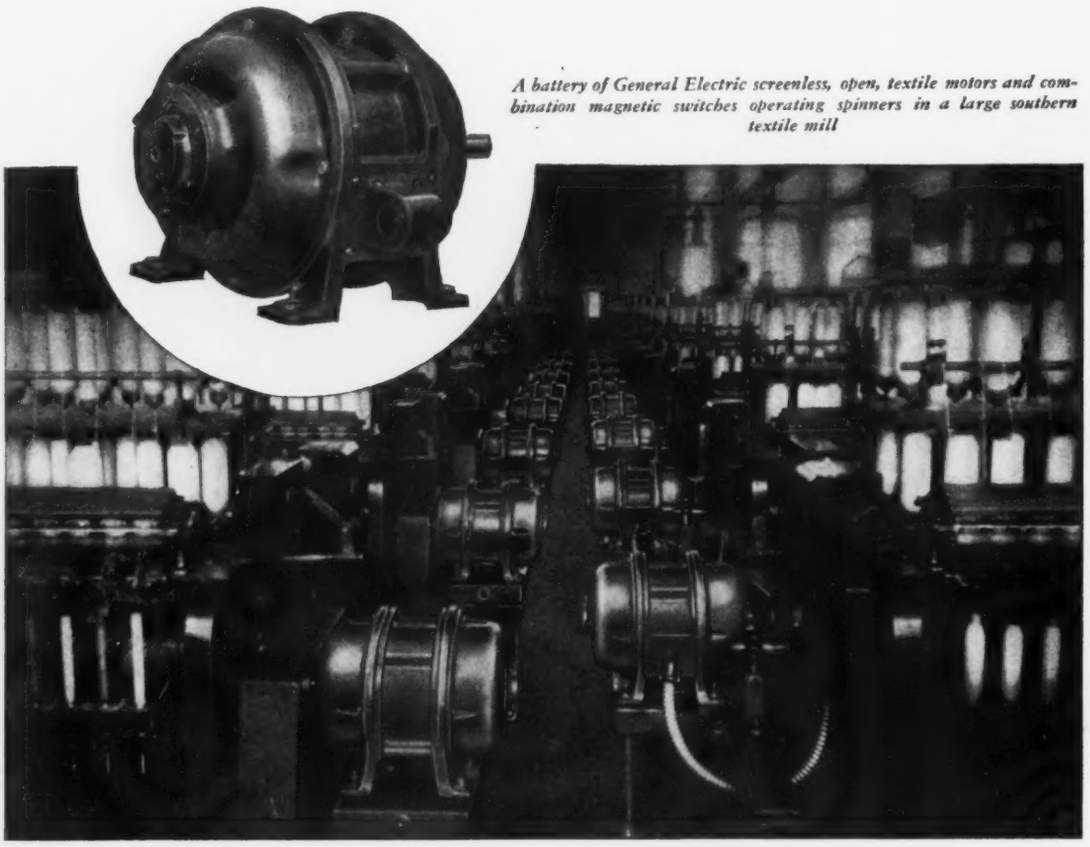
WILDMAN
THE WORLD'S STANDARD



The
WILDMAN
SINGLE HEAD
Full-Fashioned
Hosiery
Machine

Literature on Request
WILDMAN MFG. CO.
Full-Fashioned Division
NORRISTOWN
PA.

How G-E screenless, open motors will cut your maintenance costs



A battery of General Electric screenless, open, textile motors and combination magnetic switches operating spinners in a large southern textile mill

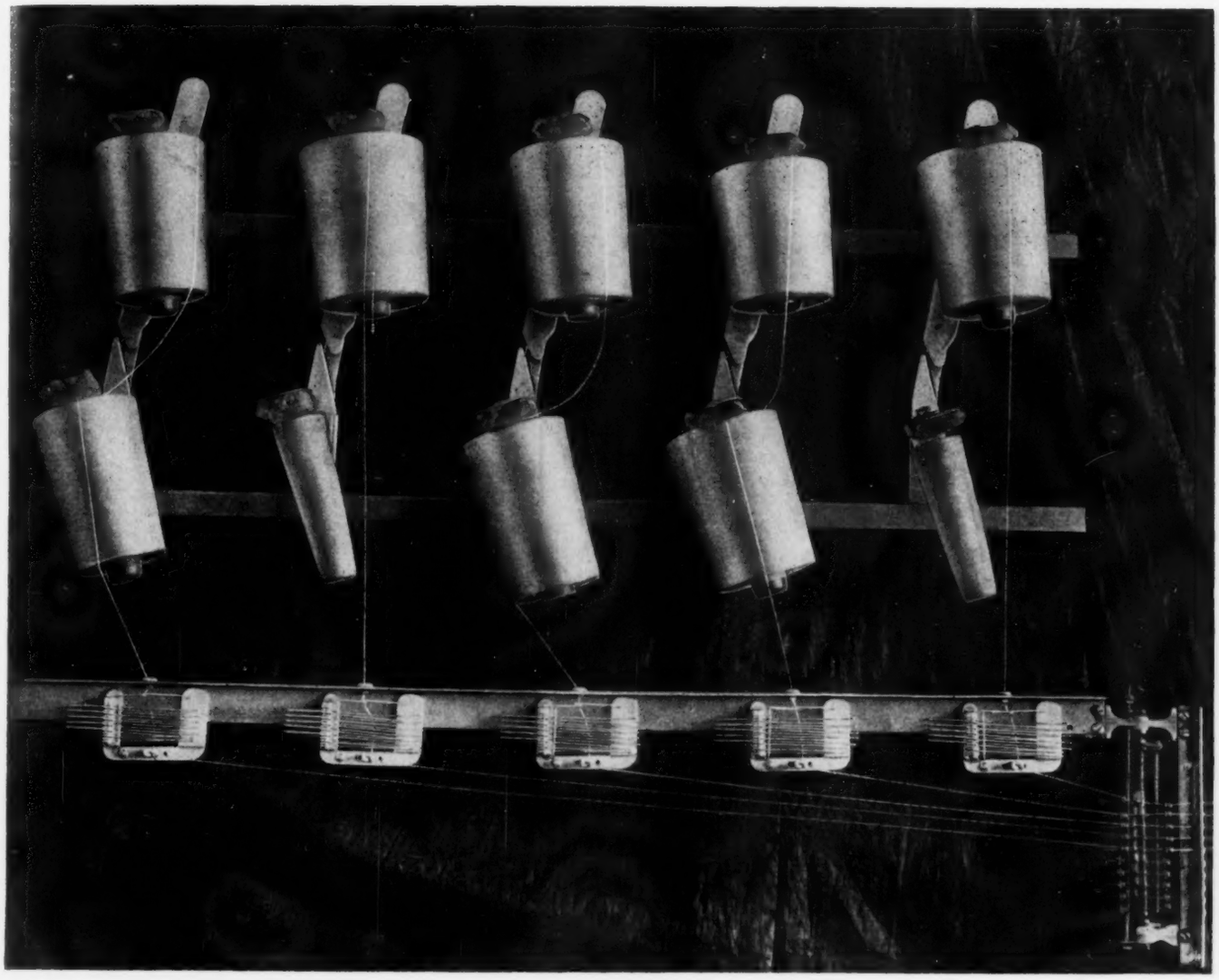
GENERAL Electric screenless, open textile motors will cut your maintenance costs because they have no screens or protective covers to remove for periodical cleaning.

These motors have large, specially designed fans; correctly located openings of ample size; and windings that have been impregnated with a special insulating varnish that has a hard, glossy finish. The combination of these important features permits large volumes of air to circulate through the motor. Any lint or dust that may be present is so forced through the motor that there is little possibility of its sticking to the rotor or stator windings. This results in a cleaner, more efficient textile motor that will prove an aid to you in reducing 1933 operating costs.

Investigate G-E screenless, open, textile motors. Write for a copy of our publication GEA-1557. Address the nearest G-E office, or General Electric, Dept. 6B-201, Schenectady, N. Y.

200-713

GENERAL ELECTRIC



Patents Applied For

The MODERN METHOD of warping rayon and acetate

DETAIL OF

MAGAZINE WARPER, CREEL

60,000 Working Ends in operation.
Silk System and Cotton System, winding from cones or bobbins.
Speed up your warpers: 200 yds. to 350 yds. per minute.
(Yarn speed determined by system used.)
UNIFORM TENSIONS: Better weaving warps. Increased production.
Compensating Tensions: gravity application: No "Ironing" effect.
Standard spacing for 5¾" diameter cones.
40% saving in floor space without sacrificing working height for girl.
The last word in MAGAZINE WARPING.

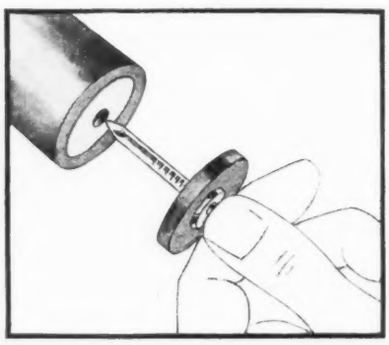
Write us for photographs and data.

WARP COMPRESSING MACHINE CO., ... Worcester, Mass., U. S. A.

SIGNIFICANT SAVINGS *at this point*

with

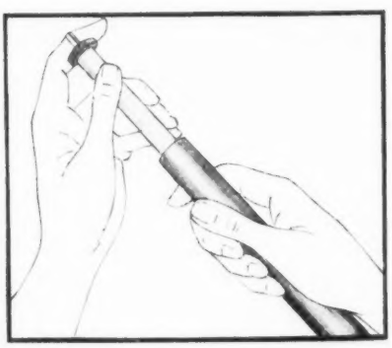
sonoco UNDERCLEARER ROLLS



The hard fibre end is easily removed. The worn cover is then slipped off the wooden core.

PROFITS are being discovered where waste and inefficiency existed before. Another cost saving item, be it ever so small, becomes important when it plugs a leak in maintenance outgo.

Only 25% of the original Sonoco Underclearer Roll wears out—the Recover Tube, which is cheap and easy to replace. The wooden core, the hard fibre ends and gudgeons, run on and on.



The new Sonoco Recover Tube slides on over the wooden core. Tap the fibre end and gudgeon into place and it is ready to run.

NRA MEMBER U.S. WE DO OUR PART

Sonoco Underclearer Rolls are available in all standard sizes, or special sizes. Exact quotations and accurate samples submitted upon receipt of inquiry accompanied by example of roll to be duplicated.

SONOCO PRODUCTS COMPANY

HARTSVILLE, SOUTH CAROLINA

BRANCH PLANTS:
Rockingham, N. C.
Garwood, N. J.
Brantford, Ont.

Main Plant and General Offices

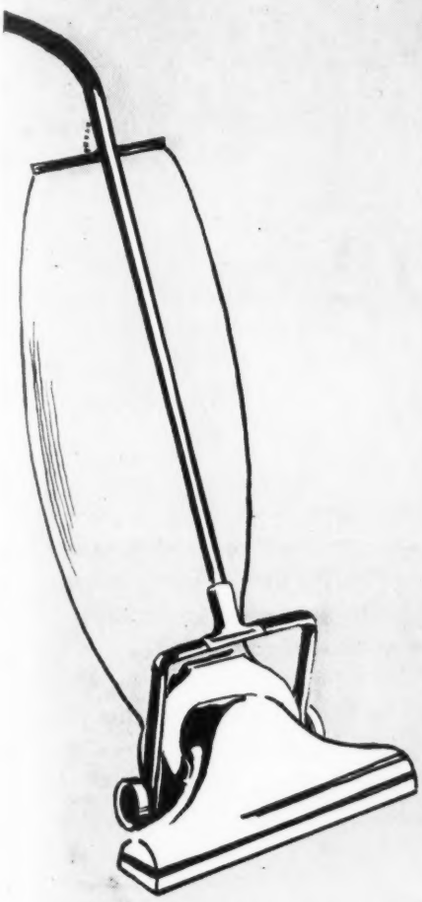
EASTERN SALES OFFICE:
North Ave.
Garwood, N. J.

"We'll bet you'd pick the vacuum cleaner"

Suppose we were to offer you, for your home, choice between an electric vacuum cleaner and a carpet sweeper of the old school. You'd pick the vacuum cleaner. Because you know that an electric appliance is faster, more dependable, more thorough.

We are pretty sure that once you studied the operation of a K-A Electric Warp Stop as against the mechanical stop, you'd prefer the more accurate. The mechanical stop operates all the time the loom is running. It works 25,000 to 40,000 times a day. No wonder it weakens and breaks down and doesn't always do its job! The electrical stop works only when the warp breaks. That's why the wear is negligible, the life practically endless. *And it always works and works fast.*

Let us tell you more about electrical warp stops, the K-A Electrical Warp Stop Motion in particular. You should know all the facts we have in our files because your mill doesn't belong in the carpet sweeper era. Write.



K-A

Operating under the code of The Textile Machinery Manufacturers.

Rhode Island
Warp Stop
Equipment Co.
Pawtucket · · · R.I.

R. I. Warp Stop Equipment Co.
Pawtucket, R. I.

I would like to see a copy of "Better Cloth at Lower Cost." This is without obligation.

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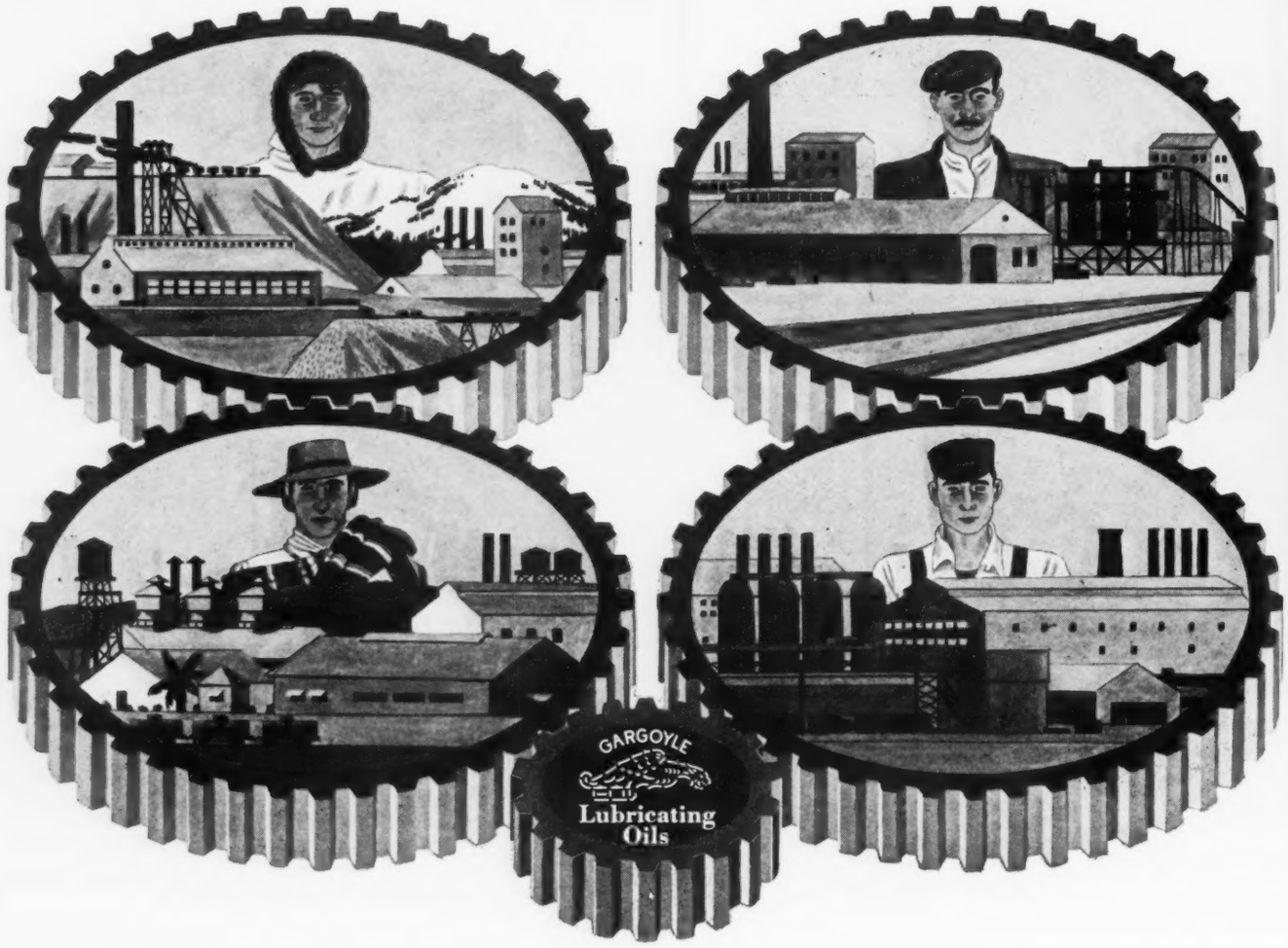
WORLD-WIDE . . . AND IN YOUR PLANT



A Vital Cog

in cost control

Today, labor costs are higher! Raw material costs are higher! Selling costs are higher! Now is the time to profit by the experience of world-wide plants in every industry and let Gargoyle Lubricants help reduce your major *plant* costs.

For, in your plant, too — Gargoyle Lubricants can reduce power costs 3% to 10%. They can lower your maintenance and repair expense. They may help speed up your production schedules. They'll certainly insure you against machinery shutdowns.

The cost of lubrication is a trifling one — probably less than 1% of your total costs of conversion. Yet this seemingly insignificant item controls major costs in your plant. Plant records, written in every language, prove that Gargoyle Lubricants *can easily save you many times your total annual cost of oil.*

Any Socony-Vacuum representative will be glad to show you lower-cost records made by leading plants in your own industry . . . to suggest means by which you can lower today's costs in *your* plant.

Socony-Vacuum Corporation, 26 Broadway, New York City. Branches and distributors throughout the world.

SOCONY-VACUUM
CORPORATION

NRA MEMBER U.S. WE DO OUR PART

WHITE THAT IS

WHITE

COVER THE EARTH
AFRICA
EUROPE
Trade Mark Registered

SHERWIN-WILLIAMS SAVE-LITE

The Ideal Interior Mill Finish Egg-Shell, Gloss and Flat

FURNISHED ALSO IN FUME-RESISTING TYPES

Walls and ceilings finished with SHERWIN-WILLIAMS SAVE-LITE softly diffuse every ray of light from windows and artificial lights. This increases working light 30% to 50%. Light up for profits and insure your investment with S-W SAVE-LITE.

SAVE-LITE has won the approval of mill owners because of its superb quality of finish and *whiteness.* The working qualities of SAVE-LITE are all that can be desired. It brushes with great ease and is adaptable for spray application. The proper balance of formula and thorough fine grinding produces great coverage and hiding power.

SHERWIN-WILLIAMS

STANDARD PRODUCTS FOR TEXTILE MILLS AND VILLAGES

TEXTILE OFFICES: Philadelphia, Charlotte, Spartanburg, Atlanta, Nashville, Newark, N. J., Boston, Mass.

Warehouse connections at all offices carry stock for prompt service to textile trade

Don't let OLD MACHINES *extract your profit*

IN the rush to install certain classes of production equipment, many plants have overlooked the fact that old extractors not yet worn out, are eating the savings made by improvement in other processes.

For a moderate outlay, you can replace your old extractors or bring them up to date and recover part of the increased costs brought about by higher wages and shorter hours. New AT&M extractors take bigger loads and require less loading time. Cycles are shortened and time in the drying ovens is reduced,—output per operator is increased.

AT&M builds a complete line of extractors (single package, jack spool, link suspended, solid curb) from 5 to 72 inches in diameter, with baskets in all machinable metals and coatings.

AT&M engineers are thoroughly familiar with finishing plant conditions and will be glad to discuss your problem with you, without obligation. Write today.

Link suspending centrifugal extractor, motor-driven type. Belt drive, if desired. 40 in., 60 in. diameter baskets.

AMERICAN TOOL & MACHINE Company BUILDERS OF CENTRIFUGALS SINCE 1864

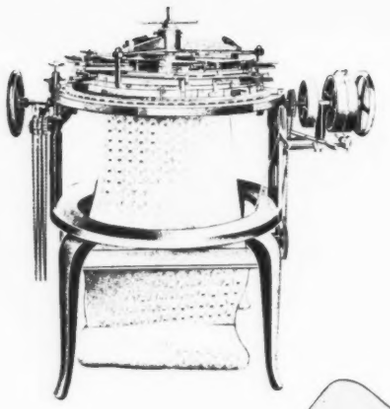
1413 HYDE PARK AVENUE, BOSTON, MASS. 30A CHURCH STREET, NEW YORK, N. Y.

Mechanical fingers . . . fingers that never fail to touch the right lever at the right time . . . control the making of each Torrington needle. We depend on swift sure *machines* for uniformity—and knitters who depend on Torrington needles know it pays!

TORRINGTON *SPRING BEARD* NEEDLES

THE MACHINE . . .

All new improvements receive serious consideration, in the building of this Stafford & Holt machine. An improvement they have long enjoyed, is *Torrington needles.*



THE PRODUCT . . .

A sweater made to wear well and look well —made on the Stafford & Holt machine, by Rudolph Knitting Mills, Inc. *Torrington needles* contributed to its sturdiness and its beauty!

. . AND TORRINGTON NEEDLES

The list of enthusiastic endorsers of Torrington needles is diversified—but in each of the names on it, there is apparent that one important thing—an emphasis on quality—quality in the merchandise they make, and in the tools they use to make it.

The Torrington Company

ESTABLISHED 1866

Torrington, Conn., U.S.A.

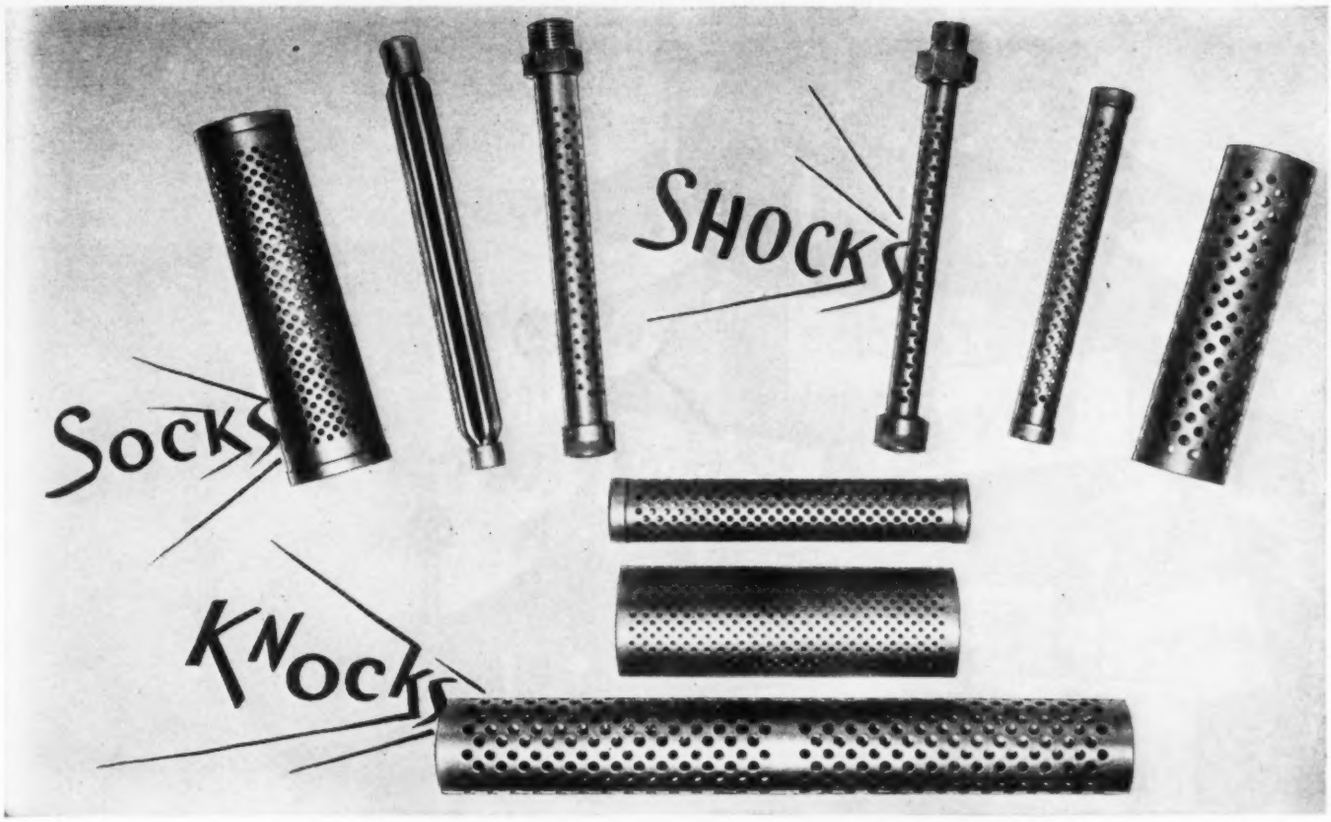
BRANCHES:

THE TORRINGTON COMPANY,	1640 FAIRMOUNT AVE.,	PHILADELPHIA
THE TORRINGTON CO., INC.,	200 FIFTH AVE,	NEW YORK, N. Y.
THE TORRINGTON COMPANY,	539 SOUTH WELLS ST.,	CHICAGO, ILLINOIS
THE TORRINGTON COMPANY	UNITED BANK BLDG.	GREENSBORO, N. C.
THE S. M. SUPPLIES CO.	210 SOUTH STREET	BOSTON, MASS.
LOS FABRICANTES UNIDOS,	964 CALLE BELGRANO,	BUENOS AIRES

FACTORIES AT:

TORRINGTON, CONN. . UPPER BEDFORD, QUEBEC
COVENTRY, ENGLAND . AACHEN, GERMANY

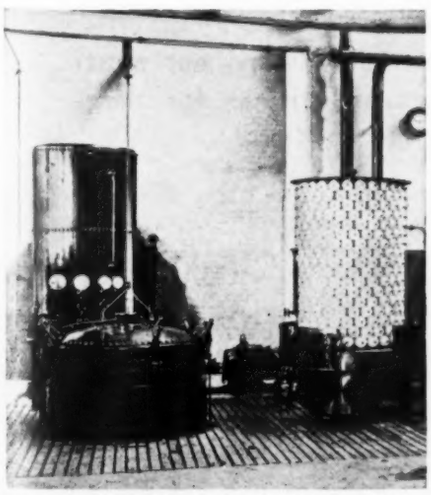
TORRINGTON *Latch* NEEDLES



● *Various types of Monel Metal spindles used in package dyeing. Manufactured by Larson Tool and Stamping Company, Attleboro, Mass.*

What cruel punishment these MONEL METAL SPINDLES CAN TAKE!

The Larson Tool and Stamping Co. now makes Perforated Monel Metal Spindles for every type of package dyeing



● You've seen, scores of times, what happens to the perforated spindles commonly used in package dyeing. Set up in careless haste—removed with hurried yanks—tossed roughly into boxes or bins—they've got to be strong to stand such treatment.

That's one reason for making them of Monel Metal, for this enduring alloy has steel-like strength. But there are other equally impressive reasons, too. Monel Metal is absolutely rust-proof, and resists the corrosion of chemicals and dyestuffs... characteristics that not only preserve its own life, but also the quality of your product. There's little or no chemical reaction with Monel Metal that will harmfully affect the colors.

In short, package dyeing spindles are made of Monel Metal for the very same reasons that other dyehouse equipment is made of this tough, corrosion-resisting Nickel alloy. For 25 years Monel Metal has been giving unrivaled service under the most destructive dyehouse conditions... dyeing silks, cotton, rayons and woolens, with direct, acid, vat, basic or sulphur colors.

The Larson Tool and Stamping Company of Attleboro, Mass., are specialists in the manufacture of all-welded, perforated spindles of Monel Metal for every type of package dyeing...yarns, roving, slubbing... as well as for tinting. The thousands of Monel Metal spindles now in use, and the frequent repeat orders, indicate that they are becoming standard equipment throughout the industry.

Let us know the dimensions and type of spindles you are now using and we will gladly arrange to have complete information and prices sent you. We should also like to send you a copy of our pamphlet, Dyeing Yarns in Package Form." Write for it.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET, NEW YORK, N. Y.

NRA MEMBER U.S. WE DO OUR PART

Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

INCO MONEL METAL

Our Christmas tree is filled with many of the items needed to help make the New Year more successful and prosperous for you.

To our friends in the Textile Industry, our most cordial Christmas greetings and thanks for their expressions of confidence and good will.

HOWARD BROS. MFG. COMPANY

Home Office and Factory: Worcester, Mass.

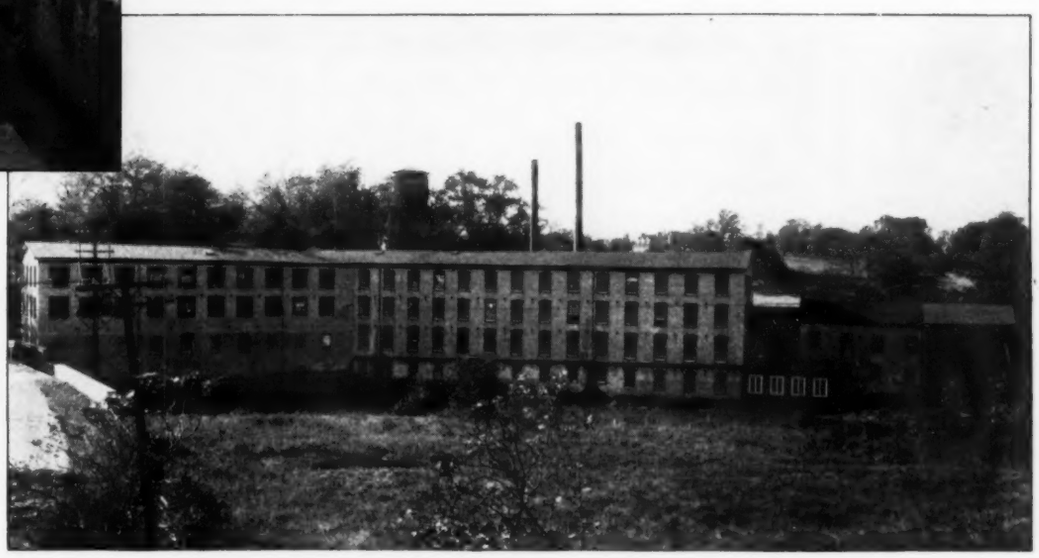
Southern Plant
244 Forsyth Street,
Atlanta, Ga.

Branch Offices
Philadelphia, Pa., Dallas,
Texas, and Washington, D. C.

More Steam–More Yarn

with 35% fuel saving

when James Irving & Son, Inc., spinners of woolen yarns, added a Westinghouse Stoker to their present mill equipment at Chester, Penna.



(Above)—*The single-retort Westinghouse Stoker that brought operating economies and increased production to the Chester Mill of James Irving & Sons, Inc., shown at the right.*

THE problem of frequent low steam pressure in this textile mill was solved once and for all by installing a Westinghouse stoker.

Check this comparison

Pressure was down—
NOW, pressure is up.

Dye vats boiled slowly—
NOW, they boil quickly.

Yarn spindles slowed down—
NOW, they turn at full speed.

The mill engine ran with irregular speed—*NOW, it's steady and pulls the load easily.*

Belts slipped—
NOW, they cling tightly.

Naturally production lagged with pressure down—
NOW, production is increased.

If low and varying steam pressure is slowing down production and increasing operating expenses in your mill, investigate the economies which the thorough, even fuel combustion of a Westinghouse stoker can bring to you. T 79825

Westinghouse
STOKERS

WESTINGHOUSE ELECTRIC & MFG. CO., EAST PITTSBURGH, PENNSYLVANIA.

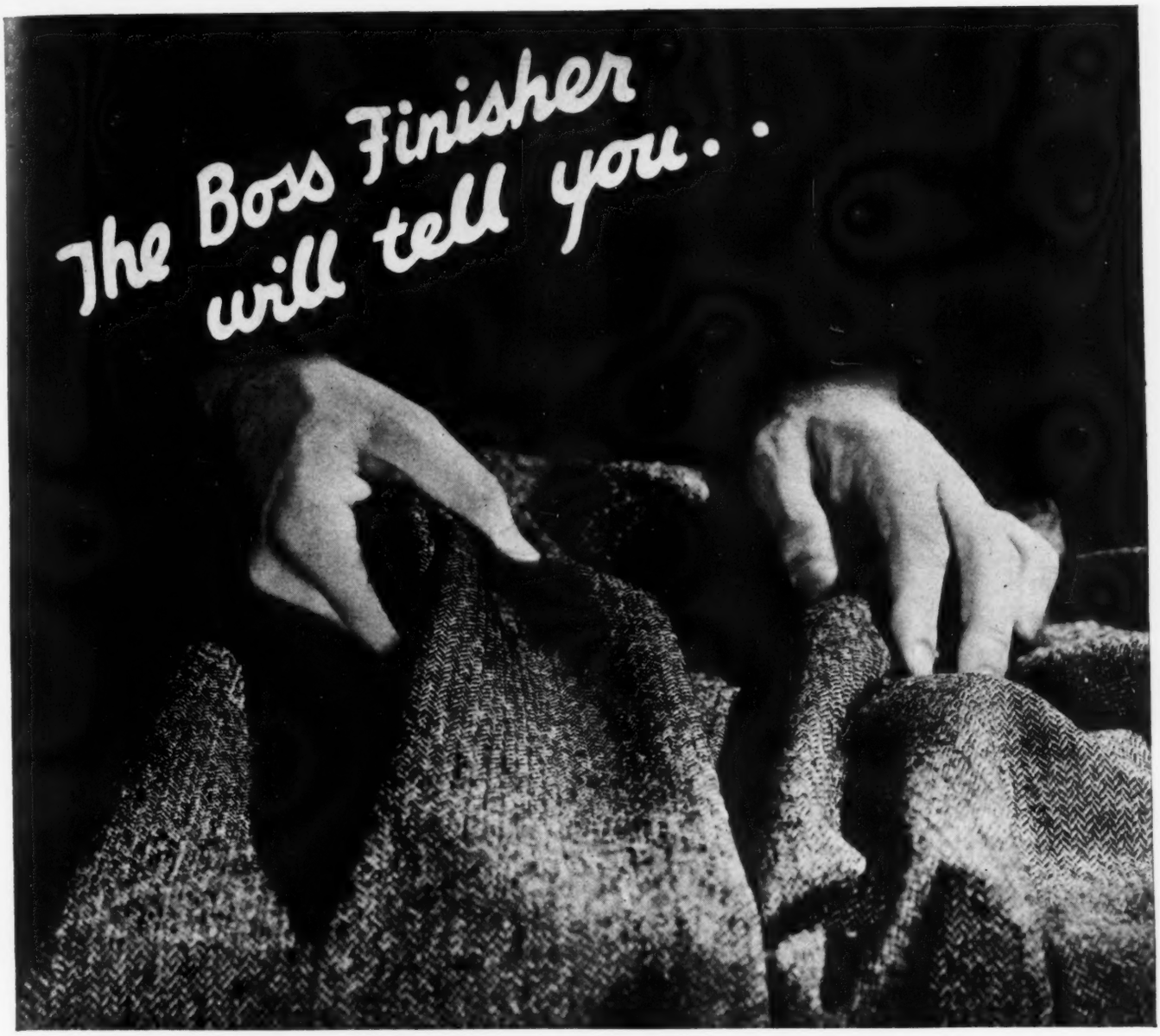
Multiple V-Belt Drive Announcement

ALLIS-CHALMERS Manufacturing Company, of Milwaukee, Wisconsin, announces that licenses under United States Letters Patent No. 1,662,511 relating to power transmitting mechanism, commonly known as Multiple V-Belt Drive, have been granted to the following belt and sheave manufacturers:

The American Pulley Company - - - - - - Philadelphia, Pa.
The Dayton Rubber Manufacturing Company - - - Dayton, O.
R. & J. Dick Co., Inc. - - - - - - - - - - Passaic, N. J.
Dodge Manufacturing Corporation - - - - - Mishawaka, Ind.
The Gates Rubber Company - - - - - - Denver, Colorado
L. H. Gilmer Company - - - - - - Tacony, Philadelphia, Pa.
Goldens' Foundry & Machine Company - - - - Columbus, Ga.
The B. F. Goodrich Rubber Company - - - - - - Akron, O.
The Goodyear Tire & Rubber Company, Inc. - - - Akron, O.
W. A. Jones Foundry & Machine Company - - Chicago, Ill.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc. - - - - - - Passaic, N. J.
The Medart Company - - - - - - - - - St. Louis, Mo.
The Ohio Valley Pulley Works - - - - - - Maysville, Ky.
Pyott Foundry & Machine Company - - - - - Chicago, Ill.
Rockwood Manufacturing Company - - - Indianapolis, Ind.
T. B. Wood's Sons Company - - - - - - Chambersburg, Pa.
Worthington Pump and Machinery Corporation - Harrison, N. J.

Allis-Chalmers Manufacturing Company

Milwaukee, Wisconsin



DURO Decating Aprons give a uniform finish and better handle

Put a DURO Decating Apron on one of your decating machines—leave it there for a few days—then ask your boss finisher about it. He will tell you that DURO produces a smoother, more uniform finish and better handle. Then inspect the apron and you'll see why. Smooth, sheer cloth without a ripple, without a single imperfection to mar the finish of your fabric. It is made from the finest cotton that money can buy; the yarns are spun with infinite care and woven with consummate skill. Your boss finisher will welcome DURO, because it helps him in his work. You will welcome DURO because it gives your fabrics the kind of finish that more than pleases your customers. Write for samples, prices and other details.

C. B. White & Company

6 Albany Street, Boston, Mass.

INDUSTRIAL TEXTILES

RE PRODUCTS

At home in Rochester

—AND READY TO SERVE

● You knew us when our headquarters were in Cincinnati. Now think of us in our new home in Rochester—and remember our new name—*The Rochester Engineering & Centrifugal Corporation.**

● We are ready to serve the textile industry with sturdy cost-cutting equipment. We are ready to serve the textile industry with men who know its problems. Specialists who understand the processing of fabrics, who can recommend the right machine and the right procedure.

● The RE staff is at your service. A letter, a wire, a phone call brings an experienced man to your plant.

THE ROCHESTER
ENGINEERING AND CENTRIFUGAL CORPORATION
110 Buffalo Road, Rochester, N.Y.

* *A subsidiary of The American Laundry Machinery Company, backed by vast "American" resources.*

NRA
WE DO OUR PART

33.8% $AVING

in lubrication costs with SINCLAIR RUBILENE

HERE is convincing proof of the savings possible with the use of Sinclair Rubilene in Diesel engine operation.

In Central Pennsylvania, a manufacturer operated a Fairbanks-Morse engine using a competitive oil at a daily cost for lubrication of 68¢.

Then he switched to Rubilene, paying 10¢ more per gallon for the Sinclair brand. But in actual use, Rubilene *actually reduced* this manufacturer's oil expense by 23¢ per day, effecting a saving in lubrication costs of 33.8%.

Why do Sinclair oils make savings like these possible? (In some instances, savings run as high as 47.6%.) Because Sinclair almost alone among refiners has access to the oldest crudes taken from all three main producing areas—the Pennsylvania, Mid-Continent and Gulf Coast fields. With this wide choice of crudes which are made into 200 finished grades of industrial lubricants, and their knowledge of lubrication requirements, Sinclair engineers recommend the most efficient and most economical oil for a specific purpose.

Sinclair engineering service is at your command. Call or write our nearest branch office or any local Sinclair Agency. Sinclair Refining Company (Inc.), New York, Atlanta, Chicago, Houston, Fort Worth, Kansas City. Sinclair Refining Company of California, Los Angeles.

Tune in Monday Evenings 40 NBC Stations — SINCLAIR MINSTRELS

SINCLAIR

NRA

WE DO OUR PART

INDUSTRIAL OILS **FUEL OILS** **GREASES**

"Ship 'em back— we can't sell goods that smell like that!"

Unpleasant odors can usually be traced to soap left in the goods during finishing. Too often some one has mistakenly tried to save a few dollars by using an inferior soap which stubbornly refused to rinse from the goods.

When you scour cloth with Olate Flakes, you can be certain of quick, thorough rinsing. Olate's exceptionally low titer, its flake form, and its uniformly high quality give you this assurance.

Olate's free rinsing qualities do much to insure you against the development of unpleasant or rancid odors in your finished goods. Olate safeguards you against losses from this source.

Note these additional Olate advantages:

Olate scours goods cleaner. It leaves the wool fiber soft and lofty. It will not harshen or yellow the wool. And because of Olate's exceptionally low degree of hydrolysis, there is less absorption of alkalinity by the wool, hence greater protection to the fibers during processing.

Good soap is a paying investment to any wool processor. In the interest of economy and better finishing, it will pay you to investigate the many advantages of Olate. The superior results from your first test run will convince you.

Procter & Gamble

General Offices—Cincinnati, Ohio

That INCREASED LABOR COST

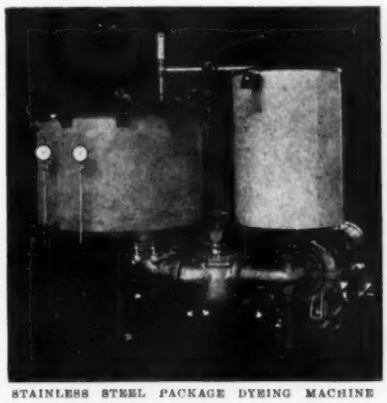
WHAT Are You Going To Do About It?

• The illustration shows the approximate minimum of increased labor cost in textile mills since the advent of the N.R.A.

Since economic considerations make it impractical to pass all of this increased cost on to customers, maximum use of modern, high production, quality improving machinery becomes an absolute necessity. In other words manufacturers can absorb most of the extra labor cost and *still* make a profit *only* by increasing production without increasing labor hours and by decreasing costs in every other possible way.

To those not already using Franklin Process Package Dyeing this method offers important production increasing and cost reducing possibilities, whether a mill operates its own dyeing department or patronizes a custom yarn dyeing service.

Assuming approximately continuous operation, a Franklin Process Package Dyeing Machine will ordinarily pay for itself within a year through reductions in the cost of labor, dyestuffs, steam and winding.


STAINLESS STEEL PACKAGE DYEING MACHINE

If colored yarn requirements do not warrant the installation of dyeing machinery (as is the case in the average mill), Franklin Process Custom Dyeing and Bleaching can still save money in many instances, due to winding economies that the Franklin Process effects, as compared with skeins and chain warps.

Franklin Process dyeing is now done in stainless metal machines (as well as in cast iron machines),—aluminum, stainless steel, or Monel. So it is possible with this method of dyeing, to minimize the losses from dirty and saddened colors, in addition to attaining the other economies mentioned.

You should learn more about this cost reducing opportunity. Write and state your problem and we will be glad to make recommendations, free of all obligations.

FRANKLIN PROCESS COMPANY

Yarn Merchants, Yarn Dyers and Mfrs. of Glazed Yarn. Also Builders of Package Yarn Dyeing Machines, Raw Stock Dyeing Machines, Top Dyeing Machines, Jackspool Yarn Dyeing Machines and Silk Soaking Machines. Main Office and Plant at Providence, R. I. Branch Plants at Philadelphia, Pa., Greenville, S. C. and Chattanooga, Tenn, New York Office 40 Worth St.

FRANKLIN PROCESS

9975

DYEING MACHINES AND CUSTOM YARN DYEING

"Look it Up First" in Your
CONSOLIDATED TEXTILE CATALOGS

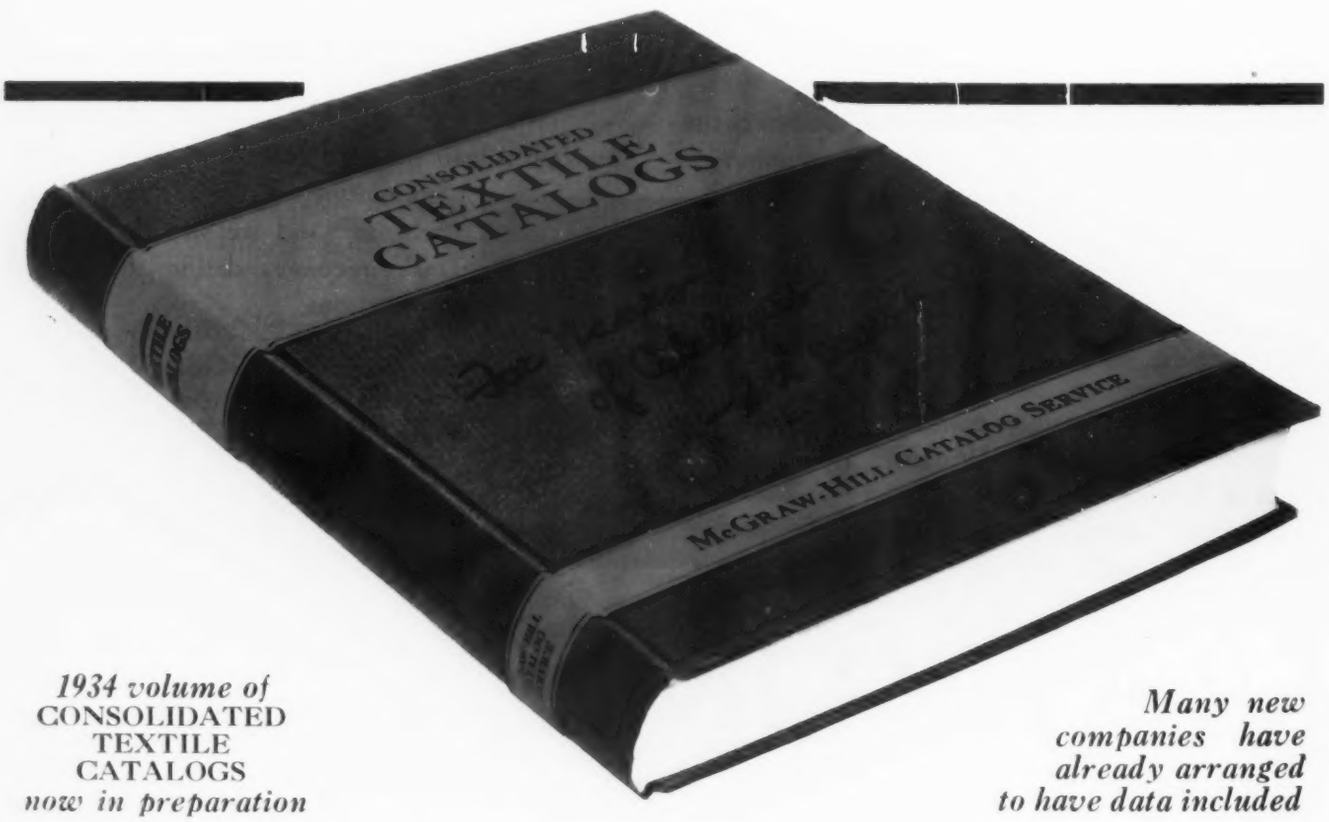
"The Cooperative Catalog Service of the Textile Industry"

Whenever you need details on equipment or supplies—whenever you need information on companies or products—"look it up first" in your CONSOLIDATED TEXTILE CATALOGS.

CONSOLIDATED TEXTILE CATALOGS represents the cooperative efforts of the manufacturers in the textile field to have in one place in the industry, the buying data, on companies and their products, which buyers of mill equipment and supplies like to have handy—to help them with their planning, their specifying, and their buying problems.

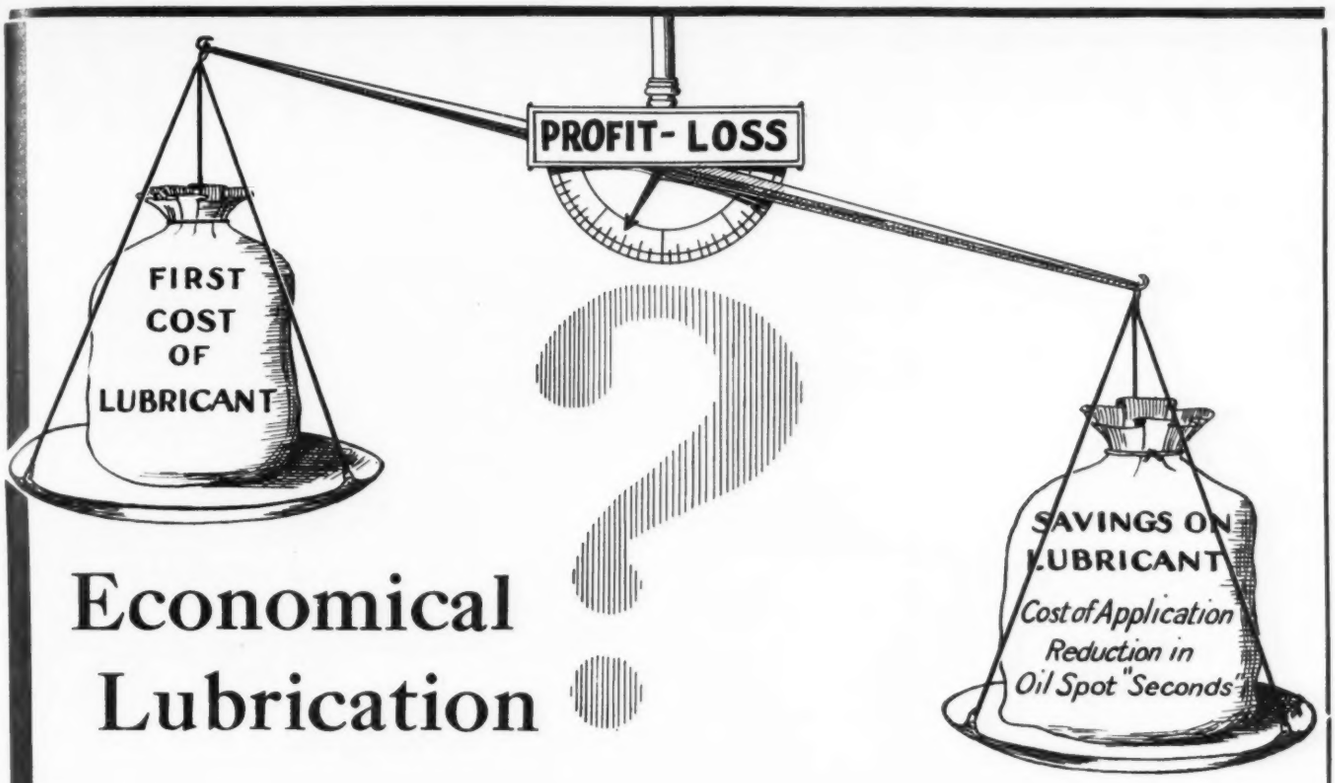
The attractive orange-banded blue cover developed by Bragdon, Lord and Nagle—McGraw-Hill, in which the mass of buying data resulting from this cooperative effort is bound, makes the volume distinctive, and therefore easy to locate, no matter in which part of the plant it may have been left, or on which part of the catalog shelf it may have been placed.

Manufacturers in the field have invested thousands of dollars to make this *one convenient "looking-up place"* possible for you. Consult it, therefore, whenever you need information on mill equipment and supplies, and on companies who make them.



1934 volume of CONSOLIDATED TEXTILE CATALOGS *now in preparation*

Many new companies have already arranged to have data included



Economical Lubrication

with NON-FLUID OIL or *"Cheap"* Lubricants?

TRADE MARK REGISTERED IN U.S. PAT OFFICE & FOREIGN COUNTRIES

Over 70% of the leading textile mills use NON-FLUID OIL, the most economical lubricant for textile machinery. Years of experience have proven that it does make positive savings on lubricant cost, the cost of application—and on production repair and maintenance costs. In addition, it practically eliminates the heavy loss caused by oil stains on goods.

NON-FLUID OIL is not the cheapest lubricant in terms of price per barrel, but time has proven it to be the most economical lubricant in the long run, for less is used and it requires less frequent application. It does away with the drip and waste of ordinary oil and goes at least 3 to 5 times as far.

Because of its longer-lasting qualities alone, NON-FLUID OIL is more economical than cheaper lubricants. But it is the foremost textile lubricant because it makes even greater savings by keeping machines in steady operation and by practically doing away with the loss from oil stains on goods.

NEW YORK & NEW JERSEY LUBRICANT CO.

Main Office: 292 Madison Avenue, New York **Works: Newark, N. J.**

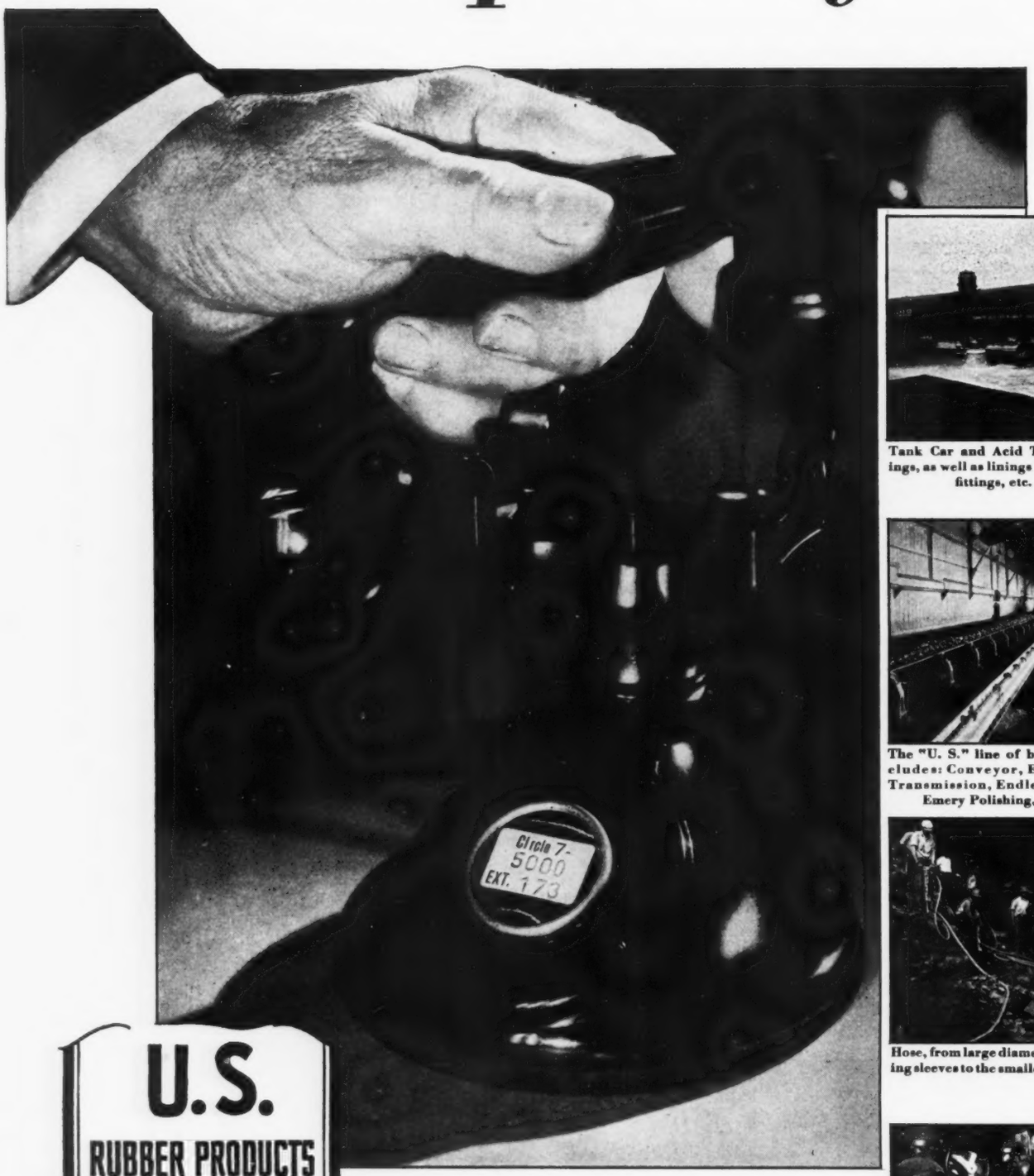
Southern District Manager, LEWIS W. THOMASON, Charlotte, N. C.

WAREHOUSES:

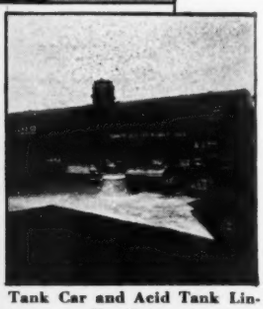
Chicago, Ill.	St. Louis, Mo.	New Orleans, La.	Atlanta, Ga.
Providence, R. I.	Detroit, Mich.	Spartanburg, S. C	Greenville, S. C.
		Charlotte, N. C.	

Better Lubrication at Less Cost per Month

The Simplest of all



U.S.
RUBBER PRODUCTS
GIVE
THAT EXTRA
SERVICE



Tank Car and Acid Tank Linings, as well as linings for pipes, fittings, etc.

The "U. S." line of belting includes: Conveyor, Elevator, Transmission, Endless, Acid, Emery Polishing, etc.

Hose, from large diameter dredging sleeves to the smallest tubing.

From the famous "Rainbow" Sheet Packing to high and low pressure Rod and Valve Stem Packings.

SPECIFICATIONS

Specify duck-weight, adhesion, tensile, elongation, gravity, burst–and you merely establish standards below which a product must not fall.

But those *extra* values above test or specification requirements, that are the fruit of long experience, supreme skill and a complete knowledge of service conditions and demands, are beyond the scope of the most rigid specifications.

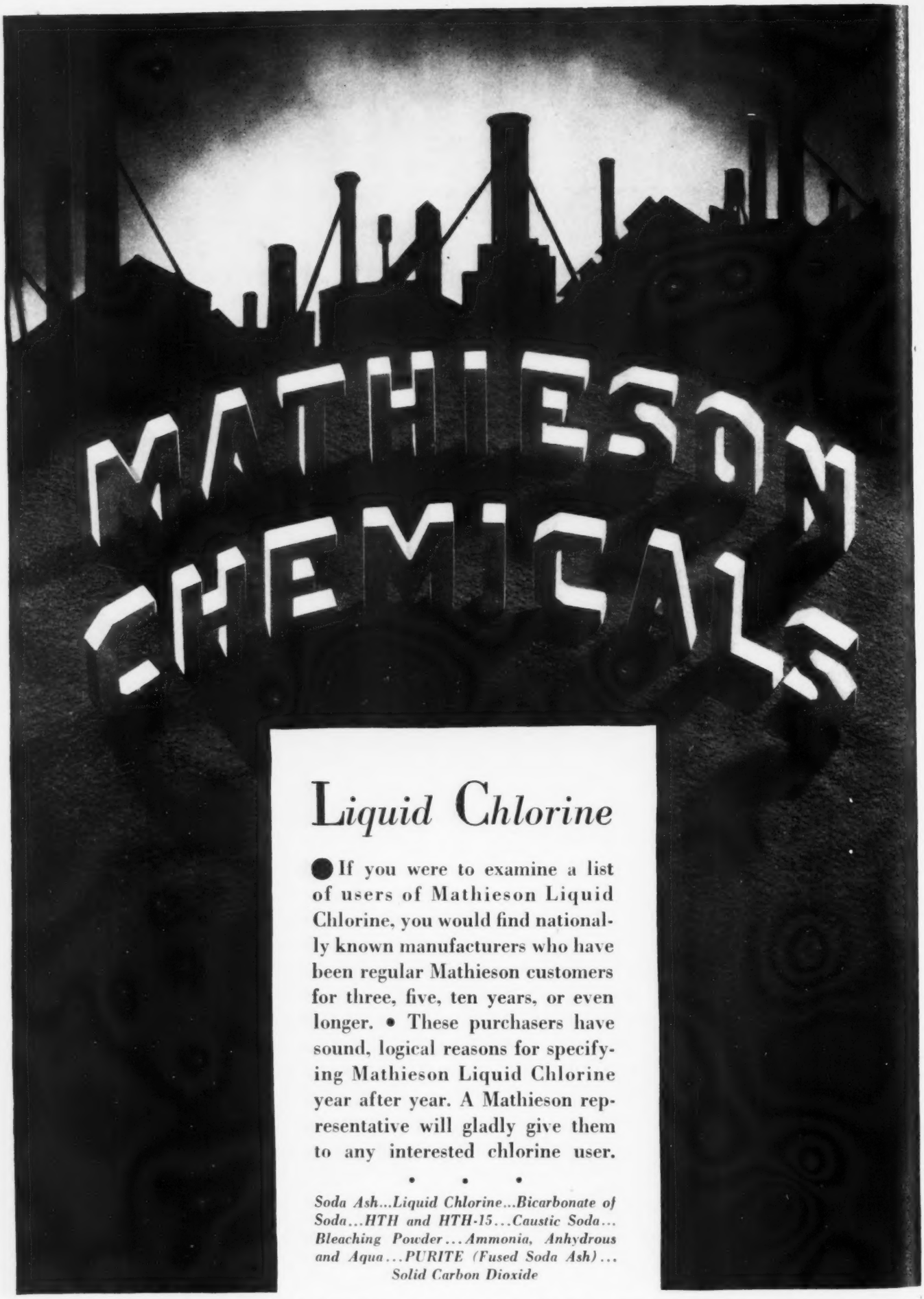
Your only assurance of getting these plus values is in the selection of a manufacturer.

In the purchase of industrial rubber products your simplest–and safest–specification is . . . "Call U. S."

—United States Rubber Company—

1790 BROADWAY NEW YORK CITY

BRANCHES IN ALL INDUSTRIAL CENTERS



Liquid Chlorine

● If you were to examine a list of users of Mathieson Liquid Chlorine, you would find nationally known manufacturers who have been regular Mathieson customers for three, five, ten years, or even longer. • These purchasers have sound, logical reasons for specifying Mathieson Liquid Chlorine year after year. A Mathieson representative will gladly give them to any interested chlorine user.

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Soda Ash...Liquid Chlorine...Bicarbonate of Soda...HTH and HTH-15...Caustic Soda... Bleaching Powder...Ammonia, Anhydrous and Aqua...PURITE (Fused Soda Ash)... Solid Carbon Dioxide

***The* MATHIESON ALKALI WORKS (*Inc.*), 250 PARK AVENUE, NEW YORK, N. Y.**